

Service Service Service

M621/01



Service Manual

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Survey of accessory:

Camcorder set M621/21 consists of:

- | | |
|----------------------------|---------------------------------|
| - M621/01 | Camcorder |
| - 22AV5226 | A/C adapter |
| - 22AV5227 | Rechargeable Battery 4.8V/1.2Ah |
| - 22AV5171 | Carrying strap |
| - SBC5507 | A/V output cable (mono) |
| - 22AV5218 | 21 pin scart adaptor |
| - SBC5380/B or
22AV5146 | Cassette adaptor |

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

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TECHNICAL DATA M621	
General	
Voltage	4.8V DC
Power	5.6W (Record, battery mode)
Video recording system	PAL
Audio FM recording system	Not used
Normal Audio system	Mono
Tape format	VHS-C (12.7mm)
Camera part	
Pick up element	CCD
Standard illumination	1400 lux
Minimum requ. illumination	1,5Lux (low light)
Image sensor	1/4 inch CCD
Lens	Built in 10:1 variable speed power zoom lens with digital AI auto focus, auto iris F1.8 (4,6-46mm) filter diam. 37mm
View finder	0.5 inch Electronic Viewfinder
Video	
Heads	4 rotary heads, 1 flying erase head
Output	1.0Vp-p/ 75Ω unbalanced
Audio	
Head	1 stationary head (Normal audio)
Input	-70 dB, 4.7kΩ or more unbalanced
Output	-8dB, 47kΩ loaded
Weight	approx. 650g (without Battery pack)
Dimensions	88(W)x117,5(H)x241,5(D)

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

SAFETY INSTRUCTIONS

- Safety regulations demand that the set be restored to its original condition and that components identical with the original types be used.

Safety components are marked by the symbol



- All IC s and many other semi- conductors are susceptible to electrostatic discharges(ESD). Careless handling during repair may reduce life drastically. When repairing, make sure that you are conneted with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools on the same potential.
- A set to be repaired should always be connected to the mains via a suitable isolating transformer.
- Never replace any modules or any other parts while the set is switched on.
- Use plastic instead of metal alignment tools. This in order to prelude short-circuit or to prevent a specific circuit from being rendered unstable.

REMARKS

- The direct voltages and oscillograms ought to be measured relative to the set mass.
- The oscillograms and direct voltages have been measured in RECORD or PLAY mode.
- The semiconductors, which are mentioned in the circuit diagram and in the parts lists, are fully exchangeable per position with the semiconductors in the set, irrespective of the type designation of these semiconductors.

SICHERHEITSHINWEISE

- Die Sicherheitsvorschriften erfordern es, daß sich das Gerät nach der Reparatur in seinem originalen Zustand befindet und daß die zur Reparatur benutzten Ersatzteile mit den OriginalErsatzteilen identisch sind.

Sicherheits-Bauteile sind mit der Markierung versehen.



- Alle IC's und Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD). Unvorschriftmässige Behandlung von Halbleitern im Reparaturfall, kann zur Zerstörung dieser Bauteile oder zu einer drastischen Reduzierung der Lebensdauer führen. Sorgen Sie dafür, dass Sie sich im Reparaturfall über ein Armband mit Widerstand auf dem gleichen Potential, wie die Masse des Gerätes befinden. Alle Bauteile, Werkzeuge und Hilfsmittel sind auf das gleiche Potential zu legen.
 - Ein zu reparierendes Gerät ist immer über einen Trenntransformator an die Netzspannung anzuschliessen.
 - Bei eingeschaltetem Gerät dürfen keine Module oder sonstige Einzelteile ausgetauscht werden.
 - Zum Abgleich sind ausschliesslich Kunststoffwerkzeuge zu benutzen (keine Metallwerkzeuge verwenden). Dadurch wird vermieden, dass ein Kurzschluß entstehen kann oder eine Schaltung instabil wird.
- ## ANMERKUNGEN
- Die Gleichspannungen und Oszillogramme sind gegen Gerätemasse zu messen.
 - Die Oszillogramme und Gleichspannungen sind in RECORD oder PLAY gemessen.
 - Die in den Stücklisten aufgeführten Bauteile sind positionsweise voll auswechselbar gegen die Bauteile in dem Gerät, ungeachtet der etwaigen Typenbezeichnungen.

AVERTISSEMENTS

- Les normes de sécurité exigent qu'après réparation l'appareil soit remis dans son état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués 
- Tout les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourté par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.
- Toujours alimenter un appareil à réparer à travers un transfo d'isolement.
- Ne jamais remplacer les modules ni d'autres composants quand l'appareil est sous tension.
- Pour l'ajustage, utiliser des outils en plastique au lieu d'instruments métalliques. Ceci afin d'éviter les court - circuits et exclure l'instabilité dans certains circuits.

OBSERVATIONS

- La mesure des tensions continues et des oscillogrammes doit se faire par rapport à la terre de l'appareil.
- Les oscillogrammes et tension sont mesurées en mode RECORD ou PLAY.
- Les semi-conducteurs indiqués dans le schéma de principe et à la liste des composants, sont interchangeables par repère sur ce chassis avec les semi-conducteurs de l'appareil quelle que soit la désignation de type donnée sur ces semi-conducteurs.

AVISOS

- Las instrucciones de seguridad exigen que, después de la reparación, el aparato se encuentre en el estado original y que las piezas de repuesto, utilizadas para la reparación, sean idénticas a las originales.
Los componentes de seguridad están marcados con 
- Todos los IC y semiconductores son sensibles a descargas electrostáticas (ESD). Un tratamiento no conforme a las instrucciones de semiconductores, en caso de reparación, podría llevar a la destrucción de estos componentes o a una reducción drástica de la duración. En caso de reparación tenga cuidado de que esté al mismo potencial que la masa del aparato, por una pulsera con resistencia. Ponga todos los componentes, herramientas y recursos al mismo potencial.
- Para reparar un aparato hay que conectarlo siempre a la alimentación a través de un transformador de aislamiento.
- Cuando un aparato está en marcha no pueden ser cambiados módulos u otras piezas de repuesto.
- Para los ajustes hay que utilizar exclusivamente herramientas de plástico (nunca herramientas metálicas). Así se evitarán cortocircuitos y circuitos inestables.

NOTAS

- Hay que medir las tensiones continuas y los oscilogramas contra la masa del aparato.
- Los oscilogramas y las tensiones continuas son medidas en "RECORD" y "PLAYBACK"
- Los componentes mencionados en las listas se los puede cambiar por los componentes en el aparato, a pesar de eventuales designaciones de tipos.

VEILIGHEIDSinSTRUCTIES

- Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, indientiek aan de oorspronkelijke, worden toegepast. De veiligheidsonderdelen zijn aangeduid met het symbool 
- Alle IC's en vele andere halfgeleiders zijn gevoelig voor elektrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor, dat U tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.
- Sluit een apparaat dat gerepareerd wordt altijd via een scheidingstransformator aan op de netspanning.
- Verwissel nooit modules of andere onderdelen terwijl het apparaat is ingeschakeld.
- Gebruik voor het afregelen plastic i.p.v metalen gereedschap. Dit om mogelijke kortsluiting te voorkomen of een bepaalde schakeling instabiel te maken.

OPMERKINGEN

- De gelijksspanningen en oscillogrammen dienen gemeten te worden ten opzichte van de apparaat aarde.
- De oscillogrammen en gelijksspanningen zijn in RECORD of PLAY mode gemeten.
- De halfgeleiders, die in het principeschema en in de stuklijsten, zijn vermeld, zijn per positie volledig uitwisselbaar met de halfgeleiders in het apparaat, ongeacht de typeaanduiding op deze halfgeleiders.

AVVERTIMENTI

- Le prescrizioni di sicurezza richiedono che l'apparecchio sia ricondotto alle condizioni originali e che siano usati ricambi originali. Componenti di sicurezza sono marcati con 
- Tutti gli IC e semiconduttori sono sensibili a scariche elettrostatiche (ESD). Noncuranze durante la riparazione di semiconduttori possono danneggiarli o condurre ad una riduzione drastica della durata. Durante la riparazione assicurarsi di essere collegati allo stesso potenziale attraverso un bracciale di protezione contro scariche elettrostatiche. Inoltre tenere anche tutti i componenti e gli attrezzi a questo potenziale.
- Apparecchi da riparare bisogna collegarli sempre via un trasformatore isolante (separatore) alla tensione normale.
- Non scambiare moduli o altri componenti quando l'apparecchio è in funzione.
- Per l'accordo usare soltanto attrezzi di plastica (non usare attrezzi metallici). Così si evitano cortocircuiti e collegamenti instabili.

OSSERVAZIONI

- Misurare le tensioni continue e gli oscillogrammi riferendosi alla massa dell'apparecchio.
- Gli oscillogrammi e le tensioni continue sono misurati in RECORD o PLAYBACK.
- I semiconduttori che sono menzionati negli schemi e nelle liste sono intercambiabili con quelli di pari tipo nonostante siano montati in posizione diverse.

Servicing of SMDs (Surface Mounted Devices)

1. General cautions on handling and storage.

- Oxidation on the SMDs terminals results in poor soldering. Do not handle SMDs with bare hands.
- Avoid for storage places that are sensitive to oxidation such as places with sulfur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. As a result the capacitance or resistance value of the SMDs may be affected.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

2. Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. Small components can, by means of litz wire and a limited horizontal force, be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A) or
- While holding the SMD with a pair of tweezers take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

Caution on removal:

- When handling the soldering iron, use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W), must preferably be provided with a thermal control (soldering temperature about 225 to 250°C).
- The chip, once removed, must **never** be used again.

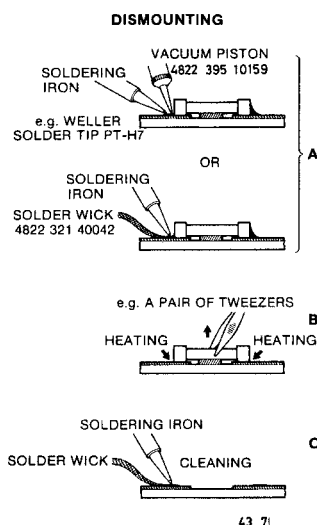


Fig 1

3. Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component at one side. Ensure that the component is positioned well on the solder lands (see Fig. 2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

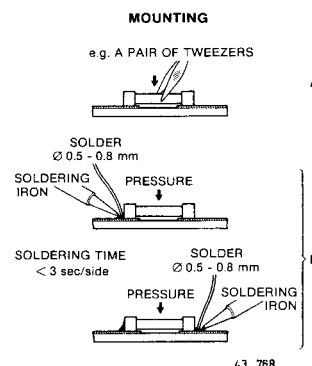


Fig. 2

Caution on attachment:

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering must be as quick as possible; care must be taken to avoid damage to the terminals and the body itself.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) must preferably be provided with a thermal control (soldering temperature about 225 to 250°C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional with the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

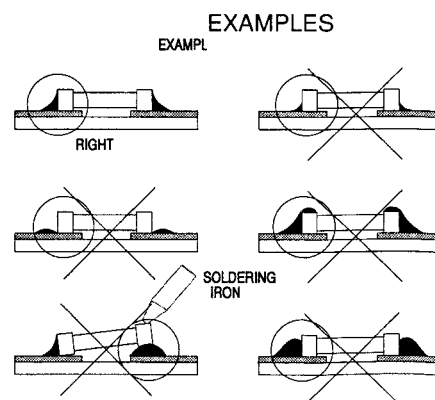
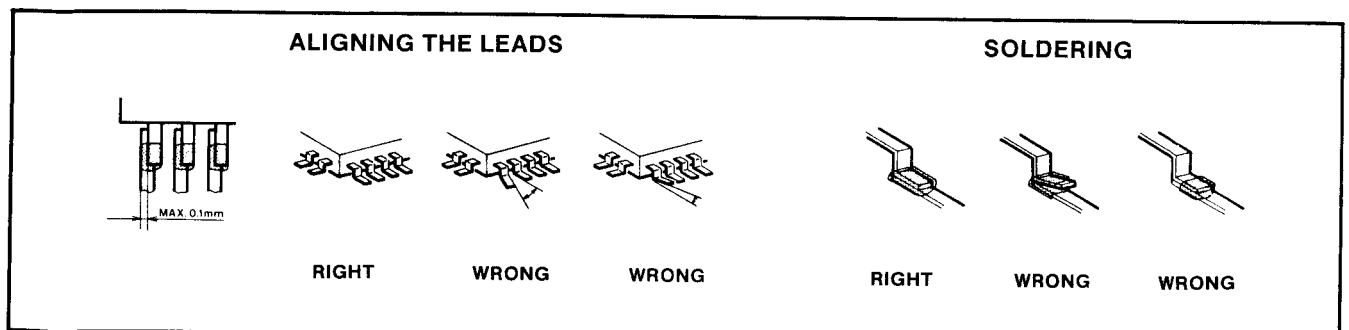
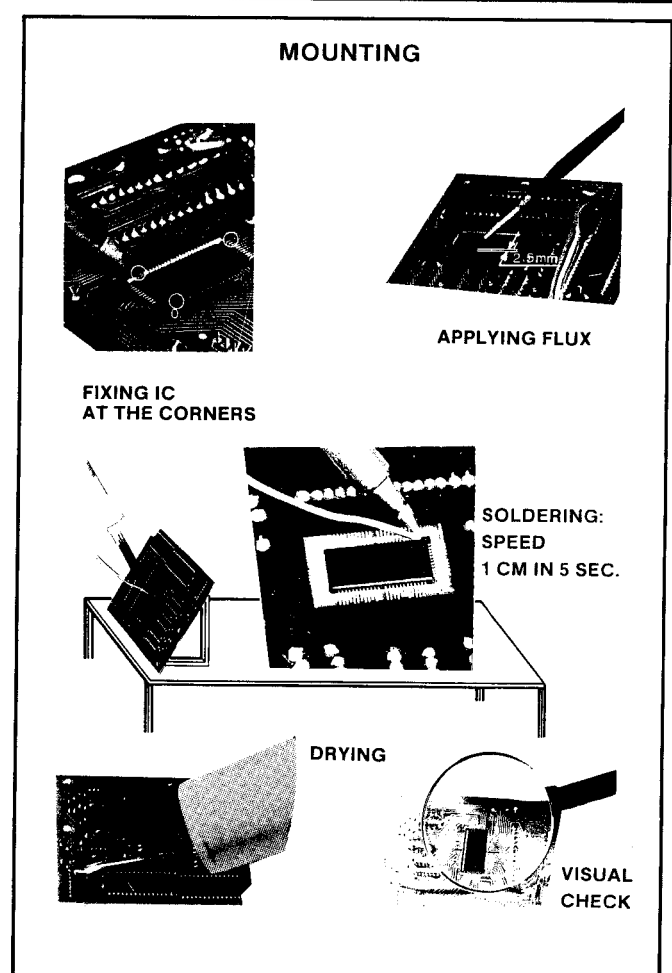
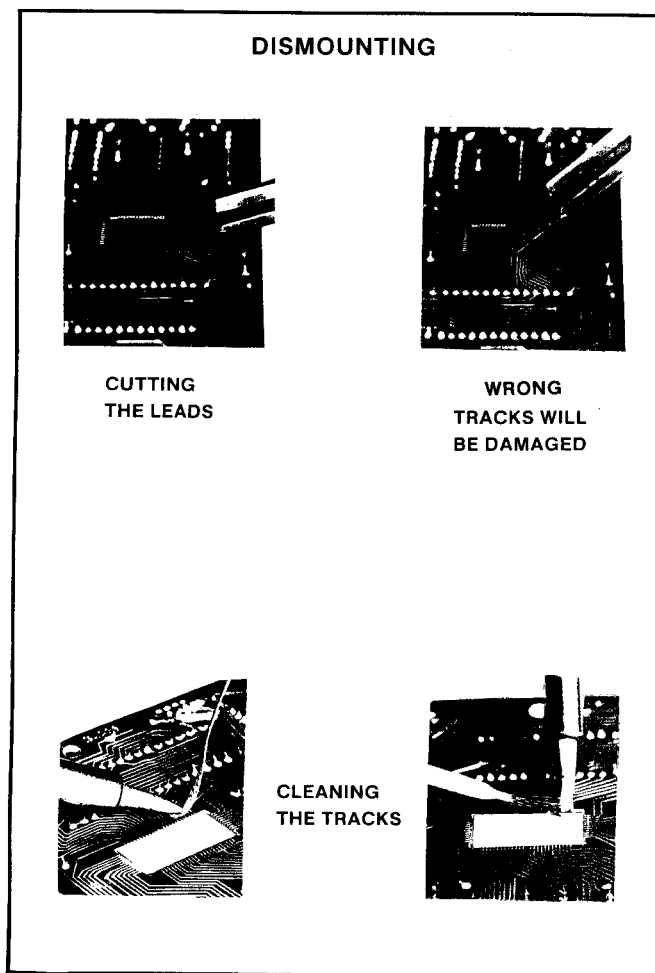
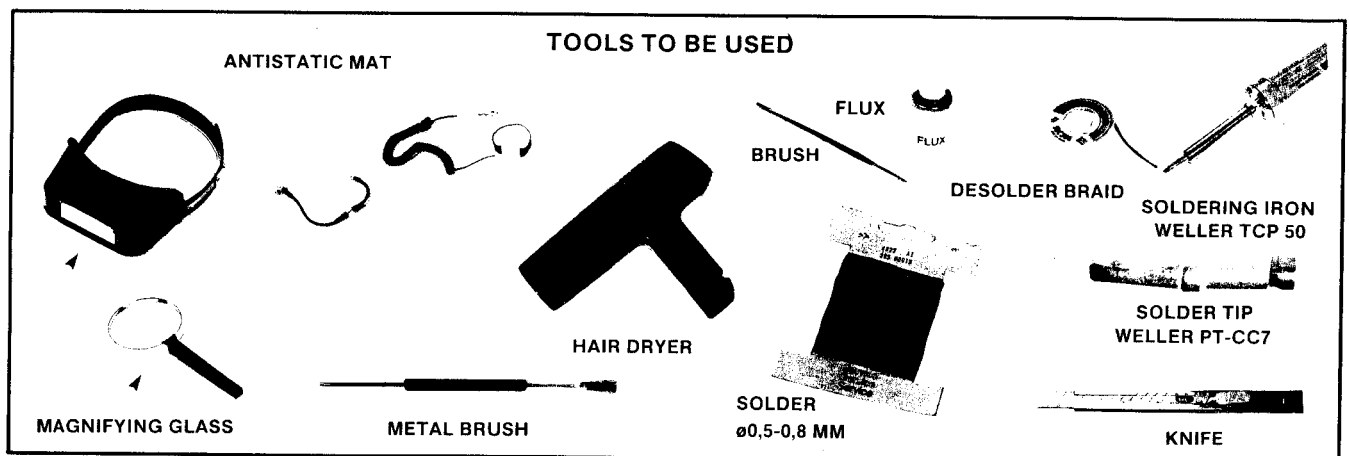


Fig. 3

FLATPACK REPLACEMENT



CROSS-REFERENCE LIST

FACTORY CODE - SERVICE CODE

Description	Factory code	Service code
Flat cable 16 pin	VFK0727	4822 321 61797
Flat cable 9 pin	VFK0728	4822 321 61798
Flat cable 6 pin	VFK0729	4822 321 61799
Extension cable 30 pin	VFK0839	4822 321 62414
Flat cable 23 pin	VFK0896	4822 321 622131
Flat cable 18 pin	VFK0913	4822 321 62216
Flat cable 12 pin	VFK0929	4822 321 62236
EVR Fixture	VFK0644	4822 321 61054
EVR connecting cable 5 pin	VFK0766A	4822 321 61621
EVR test cable 24 pin	VFK0734W	4822 321 61617
Rom 22	VFK0701ROM22	4822 209 33292
Aligment tape	VFM8180HUPF	4822 397 30186
Hunting chart	VFK0546	4822 397 30209
J chart & Ball chart	VFK0580	4822 397 30222
Colour bar chart	VFK0677	4822 397 30215
Conversion filter C12	VFK0374	4822 397 60152
Conversion filter C12	VFK0713	4822 480 50474
Conversion filter C02	VFK0375	4822 397 60153
Conversion Filter C02	VFK0716	4822 480 50476

In the Service manual mostly the Factory codes are mentioned in the text pages.

In case you need such a mentioned Service item please use this cross reference list and order with the Service code.

Technical Information

Service caution

1-1. Service Extension Cables

Use the following extension cables when checking or adjusting individual circuit boards

Ref	Part NO	PIN	PART NAME	CONNECTION	Q' TY
1	VFK0727	16	FLAT CABLE	FP6001(MAIN C.B.A.)~MECHA.	1
2	VFK0728	9	FLAT CABLE	FP4001(MAIN C.B.A.)~A/C HEAD	1
3	VFK0729	6	FLAT CABLE	FP6002(MAIN C.B.A.)~MECHA.	1
4	VFK0839	30	EXTENSION	B1001(MAIN C.B.A.)~B1601(EVF CBA)	1
5	VFK0896	23	FLAT CABLE	FP6005(MAIN C.B.A.)~FP2003(DRIVE C.B.A.)	1
6	VFK0913	18	FLAT CABLE	FP701(MAIN C.B.A.)~LENS UNIT	1
7	VFK0929	12	FLAT CABLE	B201(MAIN C.B.A.)~CCD UNIT	1

How To Use extension cables.

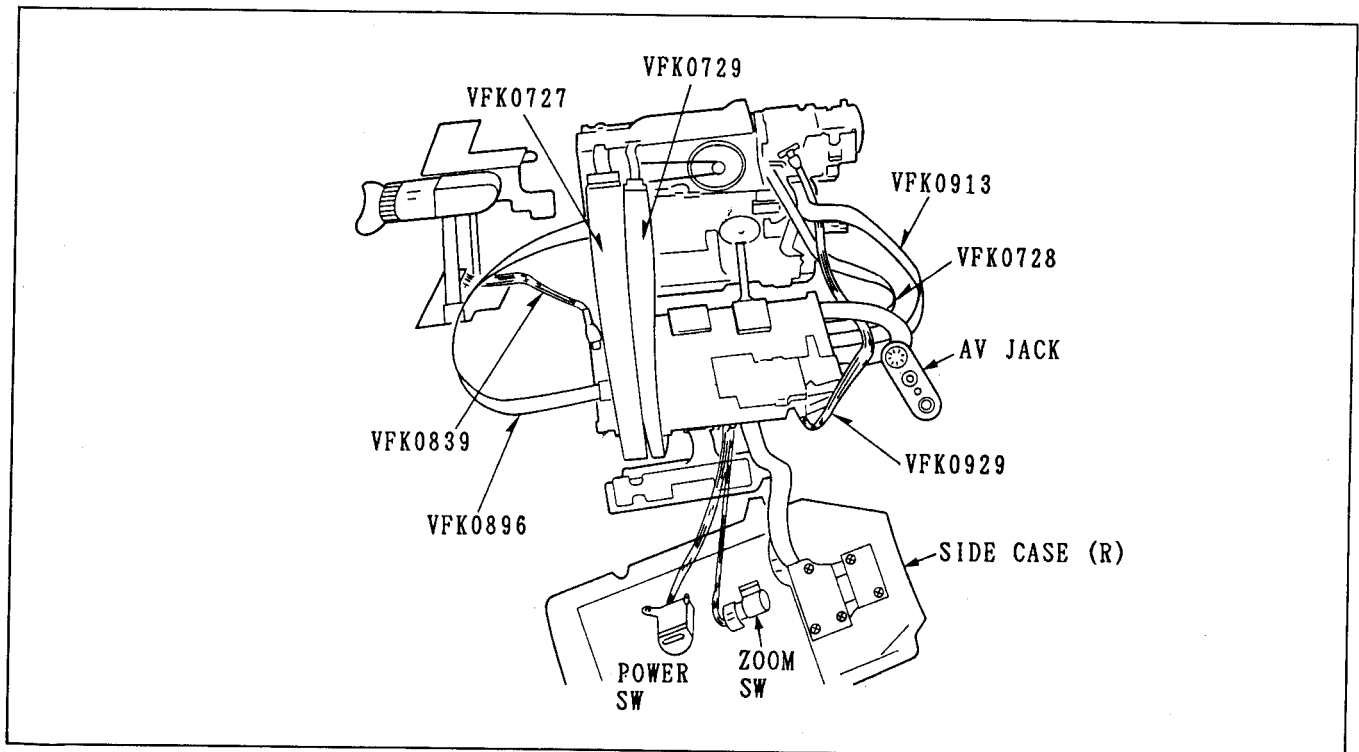


Fig. T1

NOTE:

For easy servicing, remove the 3 parts from the SIDE CASE (L) as shown below.

- 1). Zoom SW.....(By removing 1 screw.)
- 2). Power SW.....(By removing 2 screws.)
- 3). AV JACK.....(By removing 2 screws.)

1-2. New ROM IC for EVR fixture.

We are pleased to introduce the new ROM IC, VFK0701ROM22 for the EVR fixture. This ROM IC will provide you with many advanced features such as automatic calculation.

Connecting Cables for between EVR and Movie Camera are as same as previous models.

Number of Connecting Cables : VFK0734W & VFK0766A

Connection between this Movie Camera and EVR fixture are solderless when using the VFK0734W and VFK0766A. Please refer to Fig. T2 for how to use the cables.

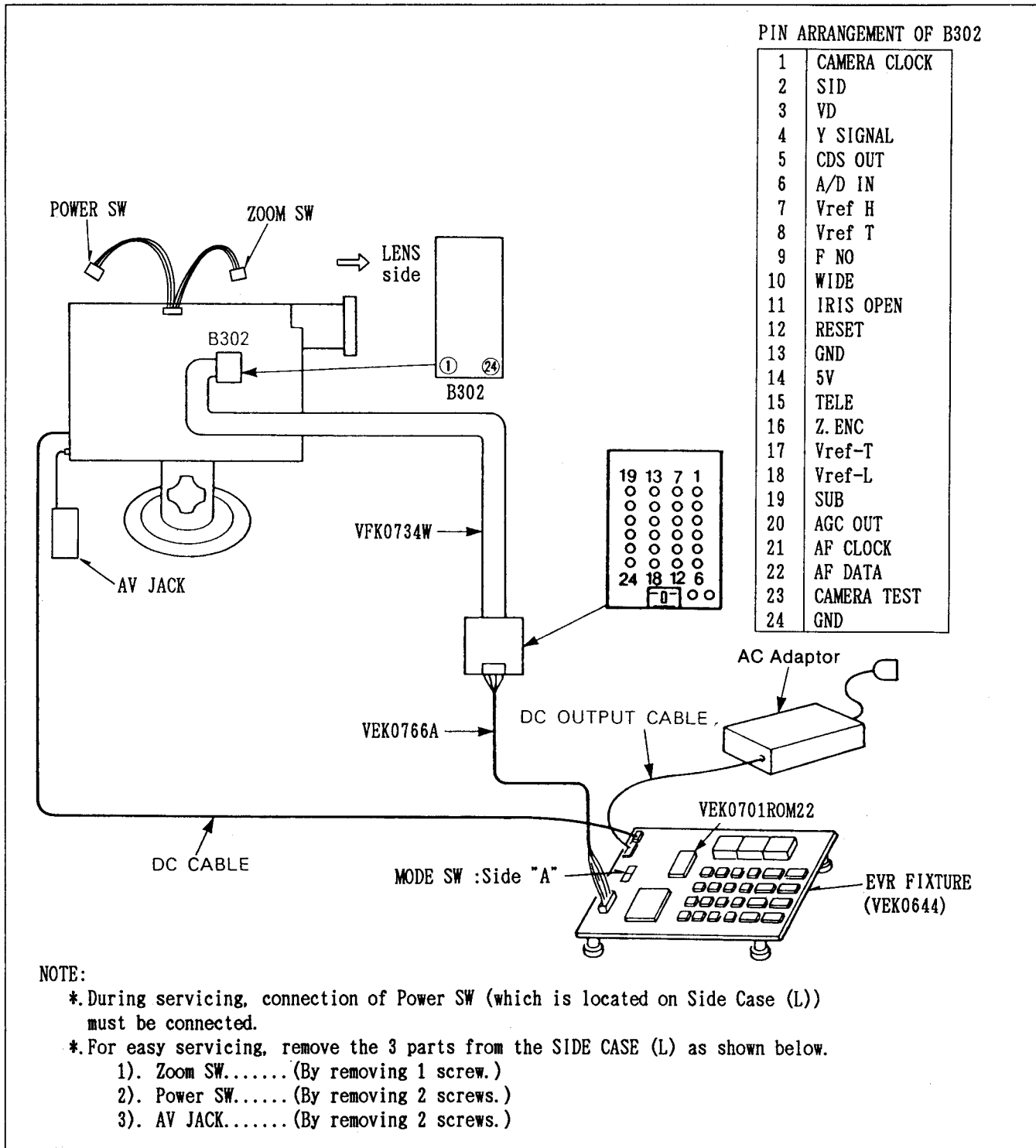


Fig. T2

Remarks :

A. G. S. (Anti Ground Shooting)

1. GENERAL DESCRIPTION

1-1. How to Use the POWER SAVE Switch

Tilting the Movie Camera more than 90 deg. from its normal horizontal position while the [POWER SAVE] Switch is in the "ON" position activates the following functions:

(1). Anti Ground Shooting (In the Shooting Mode)

The Movie Camera is automatically switched over to the shooting Pause Mode to prevent accidental shooting of the ground when carrying it after shooting a scene.

(2). Auto Power Saving (In the Shooting Pause Mode)

This turns off the Viewfinder to prevent unnecessary consumption of power from battery pack.

1-2. To Resume Shooting from the Above Condition

Hold the Movie Camera in roughly horizontal position and press the Start/Stop Button again. When you don't want to use this function, set the [POWER SAVE] Switch to "OFF".

NOTE :

• The Movie Camera is shipped with the [POWER SAVE] Switch set to "OFF".

• When the Movie Camera is restored to the horizontal position after the POWER SAVE Function has automatically stopped the shooting and switched the Movie Camera over to the Shooting Pause Mode the "CHK" Indication in the Viewfinder flashes.

In this case, some pictures may have been recorded unintentionally before the Movie Camera was switched over to the Shooting Pause Mode (between the horizontal position and more than 90 deg. from the horizontal position).

To erase that portion, use the Camera Search Function to find end of the last desired scene, and then resume shooting.

2. A. G. S. Function Table

		POWER	CONDITION	CONTROL		
				VTR	EVF	CAMERA
A. G. S. SWITCH	ON	BATTERY	REC MODE	○	×	×
			REC PAUSE	×	○	○
			NO CASSETTE	×	○	○
			OTHERS	×		
		DC JACK	REC MODE	○	×	×
			REC PAUSE	×	○	○
			NO CASSETTE	×	○	○
			OTHERS	×		
	OFF	ALWAYS		×		

NOTE :

1). The "○" mark shows A. G. S. detection.

2). When the AGS function detects, each circuit is controled as shown below.

*. VTR CONDITION.....During the Recording mode, VTR Mode turns to REC Pause.

*. EVF CONDITION.....During the Rec. Pause mode, EVF turns OFF.

*. CAMERA CONDITION..During the Rec. Pause mode, Manual Focus and Zoom function Stop.

The Built-in Lithium Battery

1. GENERAL DESCRIPTION

Camcorder M621/21 have a built-in rechargeable lithium battery.

It maintains the operation of the built-in clock (Date and Time) when the Movie Camera is turned off. When the Movie Camera is in operation, this battery is recharged automatically. However, if the Movie Camera is not used for a very long time, the lithium battery can become exhausted. In this case, the Indication "⌚" in the Viewfinder flashes and the date and time return to the initial Indication "1. 1.1990".

2. HOW TO RECHARGE THE BUILT-IN LITHIUM BATTERY

If the Indication "⌚" in the Viewfinder flashes for approx. 10 seconds when turning the Movie Camera on, the lithium battery needs to be recharged as follows:

- (1). Connect the Movie Camera to the AC Adaptor.
- (2). Turn out the [OPERATE] Switch. (Power on.)
- (3). Slide the [EJECT] Switch.
(Even with no video cassette inserted, the Eject operation must be performed.)
- (4). Close the Cassette Compartment by pressing the [LOCK] Button and wait for approx. 4 hours.
(After the lithium battery has been charged for approx. 4 hours, it can maintain the operation of the clock for approx. 3 months.)

3. HOW TO REPLACE THE LITHIUM BATTERY

(PROCEDURES)

1. Remove the E.V.F. Unit following the dis-assemble procedure (Section 2) "5. Removal of EVF unit" Part (Page 2-3.)
2. Remove 4 gold screws and black screw separate EVF C.B.A. and EVF case.
3. Unsolder the Lithium battery "VL2020" and then replace the new one. (See Fig B1)

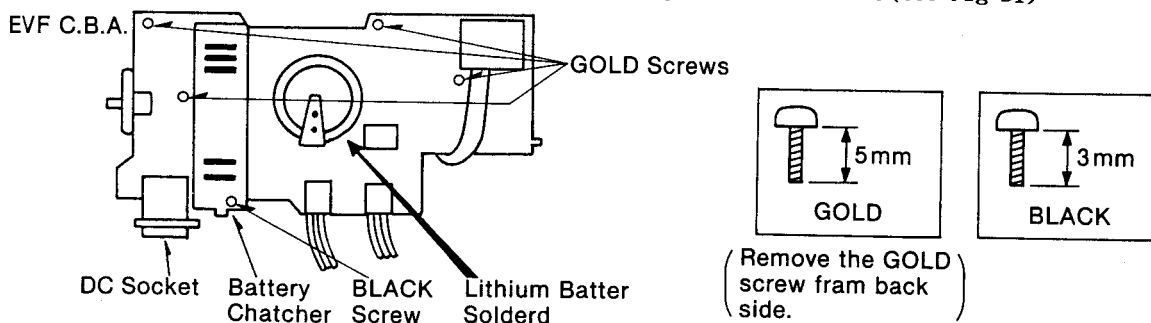


Fig. B1

NOTE :

The lithium battery is a critical component.
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacturer.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

SERVICE INFORMATION DISPLAY

General Description

The Camcorder M621/21 has SERVICE INFORMATION DISPLAY function which facilitates quick trouble-shooting. You can turn on the Service Information Display, by performing the following procedures. This causes the Service Information to be displayed on the EVF. (There are 4 kinds of SERVICE MODE, as shown below.) In the OSD Line Output Mode, Service Information can also be viewed on the TV.

MODE NAME	FUNCTION	How to turn it ON. (Push following keys simultaneously for at least 2 sec.)		
<u>OSD Line Output MODE</u>	• Checking the EVF information on the TV monitor.	DATE/TIME SET (TOP PANEL)	RESET (TOP PANEL)	DATE TIME (SIDE PANEL)

MODE NAME	FUNCTION	How to turn it ON. (Push following keys simultaneously for at least 2 sec.)		
<u>SERVICE MODE 1</u>	• Remaining Battery A/D Value • Safety Device • Capstan/Cylinder injections	DATE/TIME SHIFT (TOP PANEL)	RESET (TOP PANEL)	DATE TIME (SIDE PANEL)

MODE NAME	FUNCTION	How to turn it ON. (After choosing SERVICE MODE 1 , Push [DATE/TIME] key. (SIDE PANEL)		
<u>SERVICE MODE 2</u>	• Reference Voltage A/D Value • Mechanism position • Serial key code.	DATE TIME		

MODE NAME	FUNCTION	How to turn it ON. (After choosing SERVICE MODE 2 , Push [DATE/TIME] key. (SIDE PANEL)		
<u>SERVICE MODE 3</u>	ERROR CODE Display	DATE TIME		

MODE NAME	FUNCTION	How to turn it ON. (After choosing SERVICE MODE 3 , Push [DATE/TIME] key. (SIDE PANEL)		
<u>SERVICE MODE 4</u>	• PG SHIFTER ADJUSTMENT	DATE TIME		

ERROR CODE DISPLAY

When undesirable conditions occur, the "ERROR CODE" will automatically be displayed on the EVF, the CAMERA LED will flash for a short time, then the power will be turned off.

By turning on Service Mode 3, you can check to see what kind of undesirable condition occurred, even after the ERROR CODE has disappeared. You can check the Error Code if the AC Main Lead or the Battery has been disconnected. To clear the ERROR CODE, disconnect the AC Main Lead or the Battery. You can also check Error Code by looking at how the CAMERA LED flashes. The CAMERA LED flashing pattern will differ according to the Error Code. (See Fig. J)

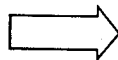
SERVICE MODE 1

- ① Remaining Battery Voltage (A/D Value)=This Value shows the voltage at IC6001 Pin 98 which detects the battery under cut.

Display :
(Example)

(NORMAL)

	0:00.0
	30
15:30	
12.21.1993	



(SERVICE MODE 1)

	1 00 60
SE1 E1	
15:30	
12.21.1993	

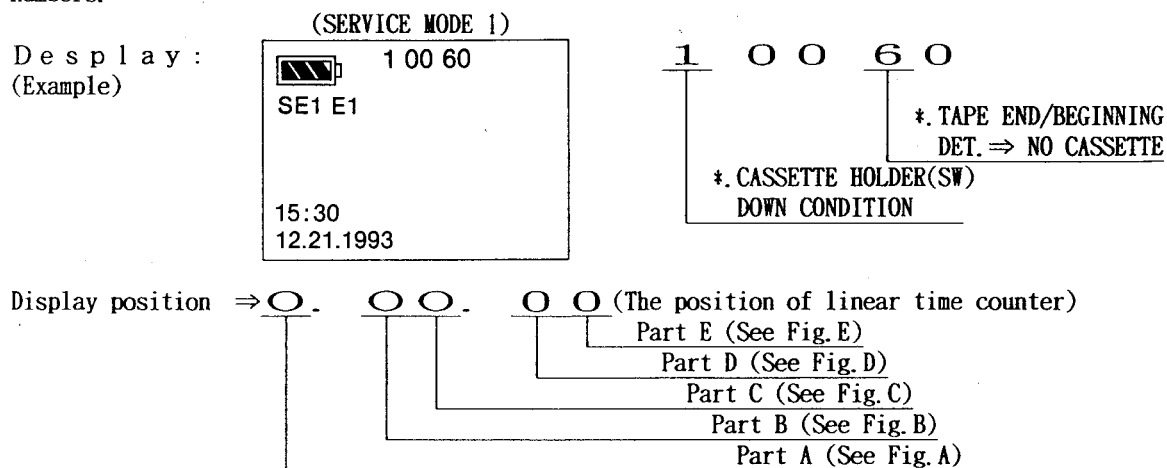
For example ⇒ S E 1 E 1 (Means you are in Service Mode 1 and the voltage at IC6001 Pin 98 is 3.35V.)

- ★ When the voltage at IC6001 pin98(the battery remaining voltage) and the voltage (approx. 3.35V) at IC6001 Pin 99(the reference voltage) became same level, battery under cut will be detected.

		L o w D i d i t															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
H i g h D i g i t	0	0	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.19	0.21	0.22
	1	0.24	0.25	0.27	0.28	0.30	0.31	0.33	0.34	0.36	0.37	0.39	0.40	0.41	0.43	0.45	0.46
	2	0.48	0.49	0.51	0.52	0.54	0.55	0.57	0.58	0.60	0.61	0.63	0.64	0.66	0.67	0.69	0.70
	3	0.72	0.73	0.75	0.76	0.77	0.79	0.80	0.81	0.83	0.85	0.86	0.88	0.89	0.91	0.92	0.94
	4	0.95	0.97	0.98	1.00	1.01	1.03	1.04	1.06	1.07	1.09	1.10	1.12	1.13	1.15	1.16	1.18
	5	1.19	1.21	1.22	1.24	1.25	1.27	1.28	1.30	1.31	1.33	1.34	1.36	1.37	1.39	1.40	1.42
	6	1.43	1.45	1.46	1.48	1.49	1.50	1.52	1.53	1.55	1.56	1.58	1.59	1.61	1.62	1.64	1.65
	7	1.67	1.68	1.70	1.71	1.73	1.74	1.76	1.77	1.79	1.80	1.82	1.83	1.85	1.86	1.87	1.89
	8	1.91	1.92	1.94	1.95	1.97	1.98	2.00	2.01	2.03	2.04	2.06	2.07	2.09	2.10	2.12	2.13
	9	2.15	2.16	2.18	2.19	2.21	2.22	2.24	2.25	2.26	2.28	2.29	2.31	2.32	2.34	2.35	2.37
	A	2.38	2.40	2.41	2.43	2.44	2.46	2.47	2.49	2.50	2.52	2.53	2.55	2.56	2.58	2.60	2.61
	B	2.62	2.64	2.65	2.67	2.69	2.70	2.71	2.73	2.74	2.76	2.77	2.79	2.80	2.82	2.83	2.85
	C	2.86	2.88	2.89	2.91	2.92	2.94	2.95	2.97	2.98	2.99	3.01	3.02	3.04	3.05	3.07	3.08
	D	3.10	3.11	3.13	3.14	3.16	3.17	3.19	3.20	3.22	3.23	3.25	3.26	3.28	3.29	3.31	3.32
	E	3.34	3.35	3.37	3.38	3.40	3.41	3.43	3.44	3.46	3.47	3.49	3.50	3.52	3.53	3.55	3.56
	F	3.58	3.59	3.61	3.62	3.64	3.65	3.67	3.68	3.70	3.71	3.73	3.74	3.75	3.77	3.78	3.80

Remaining Battery Voltage (A/D value) (Voltage at IC6001 Pin 98)

- ② The condition of the tape, safety device, capstan/cylinder information are shown in hexa decimal numbers.



DISPLAY	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CONTENTS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CASSETTE SW (CASS. DOWN:1)	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
SAFETY TAB SW (TAB:1)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
S-VHS OPERATIONS SW (ON:1)	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
S-VHS DETECTION SW (S-VHS:1)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Fig. A

DISPLAY	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CONTENTS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LOADING LOCK (DET.:1)	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
CYLINDER LOCK (DET.:1)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
T-REEL LOCK (DET.:1)	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
S-REEL LOCK (DET.:1)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Fig. B

DISPLAY	0	4	8	C
CONTENTS	0	4	8	C
NOT USED (ALWAYS "0")	0	0	0	0
NOT USED (ALWAYS "0")	0	0	0	0
BATTERY UNDER CUT (DET.:1)	0	1	0	1
DEW SENSOR (DET.:1)	0	0	1	1

Fig. C

DISPLAY	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CONTENTS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
UN-LOADING COMMAND (OUTPUT:1)	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
TAPE END DETECTION (DET.:1)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
TAPE BEGINNING DETECTION (DET.:1)	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
POSITION CHATARING (DET.:1)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Fig. D

DISPLAY	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CONTENTS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CYLINDER ON (OUTPUT:1)	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
CAPSTAN ON (OUTPUT:1)	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
CAPSTAN REV. (OUTPUT:1)	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
LOADING ON (OUTPUT:1)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Fig. E

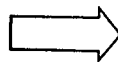
SERVICE MODE 2

- ① Reference voltage A/D Value = This value shows the voltage at IC6001 Pin 99 which is used as a reference voltage to detect the battery under cut.

Display :
(Example)

(SERVICE MODE 1)

	1 00 60
SE1 E1	
15:30	
12.21.1993	



(SERVICE MODE 2)

	3 00 FF
SE2 A7	
15:30	
12.21.1993	

For example

⇒ S E 2 A 7

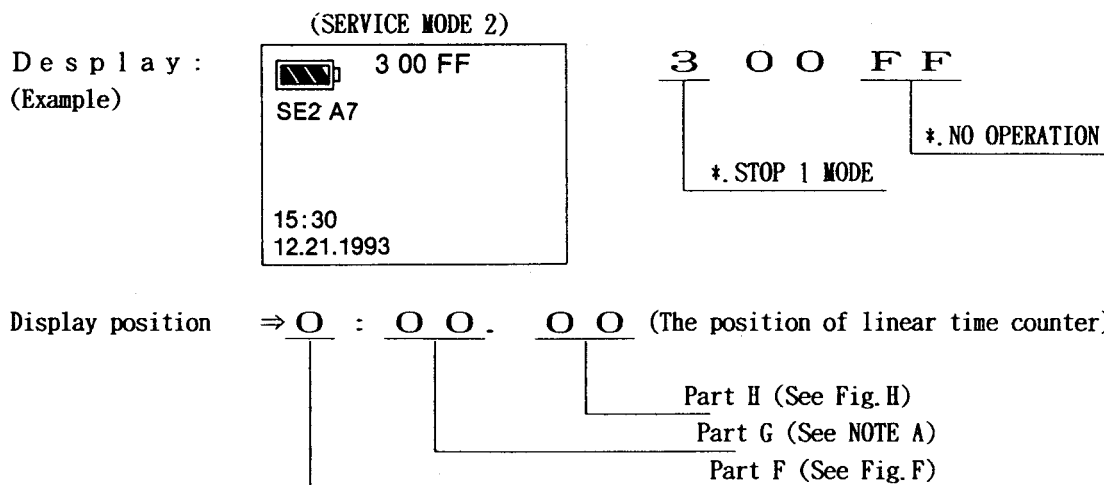
(It shows Service Mode 2 and the voltage at IC6001 pin 99 is 2.49V.)

(unit:V)

		L o w D i g i t															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
H i g h	0	0	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.19	0.21	0.22
	1	0.24	0.25	0.27	0.28	0.30	0.31	0.33	0.34	0.36	0.37	0.39	0.40	0.41	0.43	0.45	0.46
	2	0.48	0.49	0.51	0.52	0.54	0.55	0.57	0.58	0.60	0.61	0.63	0.64	0.66	0.67	0.69	0.70
	3	0.72	0.73	0.75	0.76	0.77	0.79	0.80	0.81	0.83	0.85	0.86	0.88	0.89	0.91	0.92	0.94
	4	0.95	0.97	0.98	1.00	1.01	1.03	1.04	1.06	1.07	1.09	1.10	1.12	1.13	1.15	1.16	1.18
	5	1.19	1.21	1.22	1.24	1.25	1.27	1.28	1.30	1.31	1.33	1.34	1.36	1.37	1.39	1.40	1.42
	6	1.43	1.45	1.46	1.48	1.49	1.50	1.52	1.53	1.55	1.56	1.58	1.59	1.61	1.62	1.64	1.65
	7	1.67	1.68	1.70	1.71	1.73	1.74	1.76	1.77	1.79	1.80	1.82	1.83	1.85	1.86	1.87	1.89
	8	1.91	1.92	1.94	1.95	1.97	1.98	2.00	2.01	2.03	2.04	2.06	2.07	2.09	2.10	2.12	2.13
	9	2.15	2.16	2.18	2.19	2.21	2.22	2.24	2.25	2.26	2.28	2.29	2.31	2.32	2.34	2.35	2.37
D i g i t	A	2.38	2.40	2.41	2.43	2.44	2.46	2.47	2.49	2.50	2.52	2.53	2.55	2.56	2.58	2.60	2.61
	B	2.62	2.64	2.65	2.67	2.69	2.70	2.71	2.73	2.74	2.76	2.77	2.79	2.80	2.82	2.83	2.85
	C	2.86	2.88	2.89	2.91	2.92	2.94	2.95	2.97	2.98	2.99	3.01	3.02	3.04	3.05	3.07	3.08
	D	3.10	3.11	3.13	3.14	3.16	3.17	3.19	3.20	3.22	3.23	3.25	3.26	3.28	3.29	3.31	3.32
	E	3.34	3.35	3.37	3.38	3.40	3.41	3.43	3.44	3.46	3.47	3.49	3.50	3.52	3.53	3.55	3.56
	F	3.58	3.59	3.61	3.62	3.64	3.65	3.67	3.68	3.70	3.71	3.73	3.74	3.75	3.77	3.78	3.80

Reference Voltage (A/D value) (Voltage at IC6001 Pin 99)

- ② The contents of mechanism position, serial key code and mechanical process number are shown in hexa decimal number.



DISPLAY	MECHANISM POSITION
1	E J E C T
2	P R E • E J E C T
3	S T O P 1
4	P R E • S T O P
5	(M I D)
6	
7	
8	S T O P 2
9	_____
A	P L A Y

Fig. F (Mechanism Position)

DISPLAY	KEY CODE
0 0	S T O P
0 1	E J E C T
0 2	R E W
0 3	F F
0 6	P A U S E
0 8	R E C / R E C P A U S E
0 A	P L A Y
F F	N O O P E R A T I O N

Fig. H (Key code)

NOTE A:

This part shows mechanism movement process.

However it changes too fast to read it.

When servicing, use the Part F (Mechanism Position: See Fig. F) in stead of Part G.
 in stead of Part G.

SERVICE MODE 3

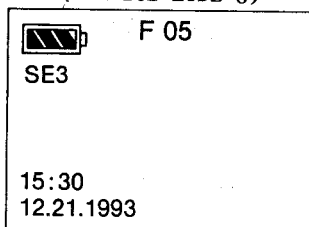
- ① When undesirable conditions occur, the Error Code is stored in IC6001 automatically, using the Lithium battery.

When you turn on Service Mode 3, the Error Code is displayed on the E.V.F.

Also, the CAMERA LED is flashed according to Error code.

(SERVICE MODE 3)

Display :
(Example)



F O 5

*.Detected the Cylinder lock

Display position ⇒ ○ : ○ ○ - ○ ○ (The position of linear time counter)
 (See Fig. I) | | |
 Blank (no display)

(See Fig. I)

Blank (no display)

$$01 \sim 05, \quad 10 \sim 11$$

F or U

Display position⇒C A M E R A L E D (See Fig. J)

D I S P L A Y			C O N D I T I O N	The Power off timing
F	0	1	T - R E E L L O C K	After 1 minute flashing LED
F	0	2	S - R E E L L O C K	After 1 minute indicating LED
F	0	3	U N L O A D I N G L O C K	After 1 minute indicating LED
F	0	4	L O A D I N G L O C K	After 1 minute indicating LED
F	0	5	C Y L I N D E R L O C K	After 1 minute indicating LED
U	1	0	D E W D E T E C T I O N	After 18 minute indicating LED
U	2	0	H E A D C L O G G I N G	Not turning off

Figure I	Error Code
----------	------------

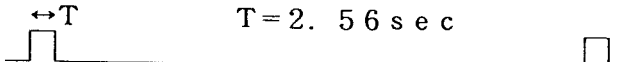
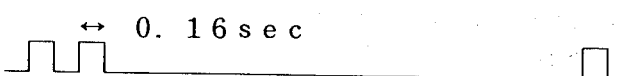
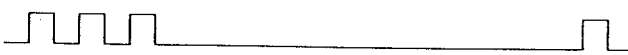
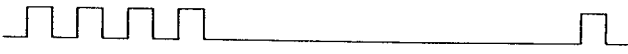
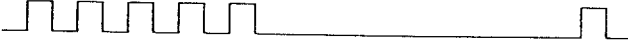
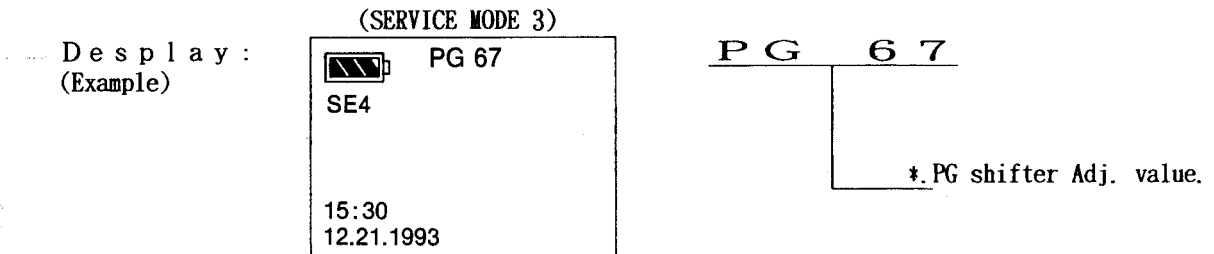
Lock Condition	Power LED Flashing Timming
T-REEL LOCK	 $\leftrightarrow T$ $T=2.56 \text{ sec}$
S-REEL LOCK	 $\leftrightarrow 0.16 \text{ sec}$
UNLOADING LOCK	
LOADING LOCK	
CYLINDER LOCK	
OTHERS	Power LED is flashed at 1 HZ timing

Fig. J LED Flashing Timing

SERVICE MODE 4

- ① Service Mode 4 is PG SHIFTER ADJUSTMENT mode for Servo section.
For more detail, please refer to Adjustment Service Manual Order No.4822 726 15103



3. How to Check Digital Circuit

3-1. Checking Principle

The digital circuit can be checked if a ramp signal (sawtooth signal) is supplied to the input of A/D Converter (IC301-19). The output of A/D

Converter is described below.

In addition to the A/D Converter (IC301) output, all digital ICs input and output signals become specified pulses, which are listed in schematic diagram.

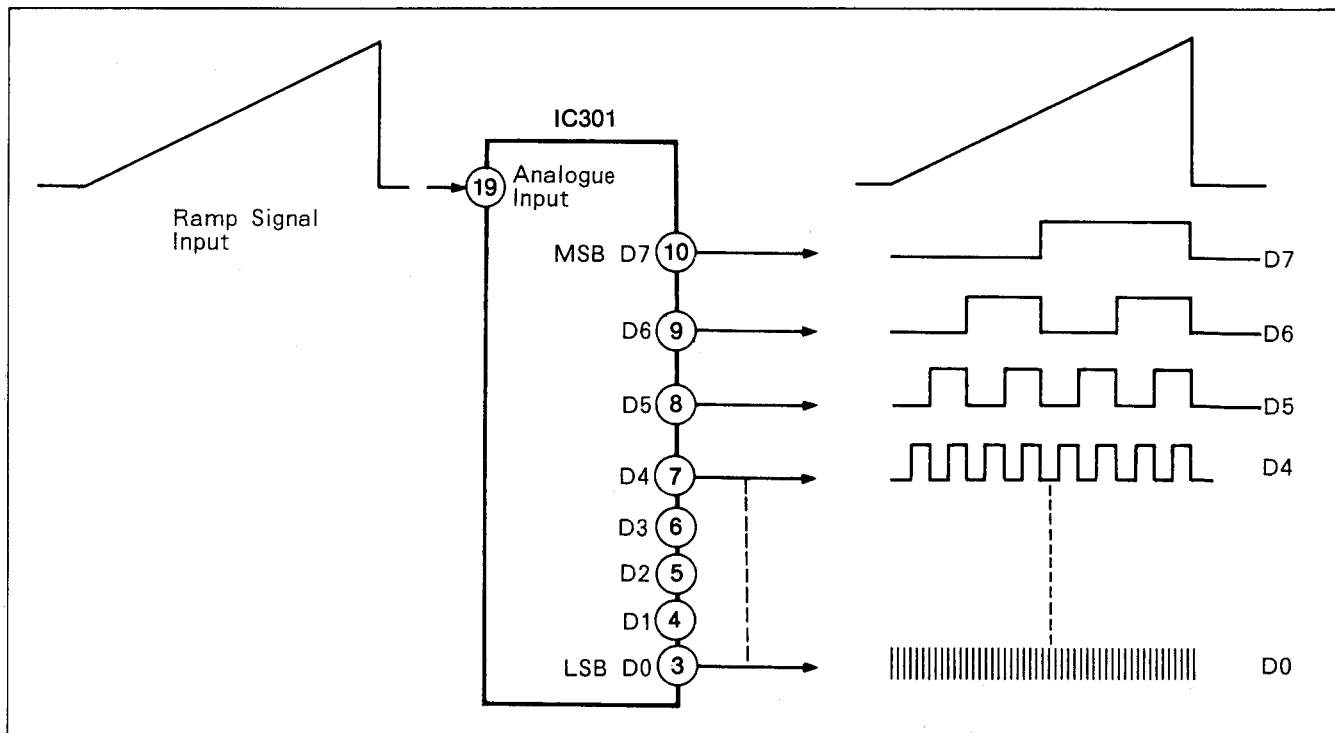
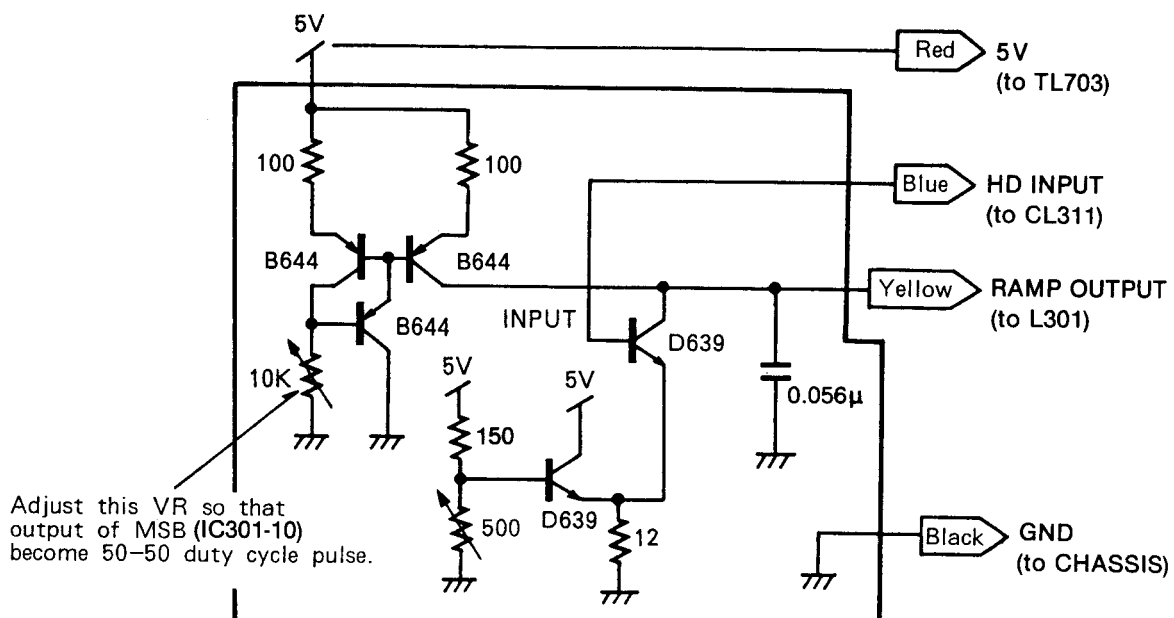


Fig. L1

3-2. How to Connect ramp generator.

In order to generate a ramp signal that synchronizes with the HD(horizontal drive) of the camera, the following ramp generator circuit has been designed.

Construct and connect it to process board as shown in Fig. L2, L3.



ITEMS	VALUE	PCS
RESISTOR	12ohm	1
	100ohm	2
	150ohm	1
VARIABLE RESISTOR	10Kohm	1
	500ohm	1
TRANSISTOR	PNP	3
	NPN	2
CAPACITOR	0.056μ	1

Fig. L2

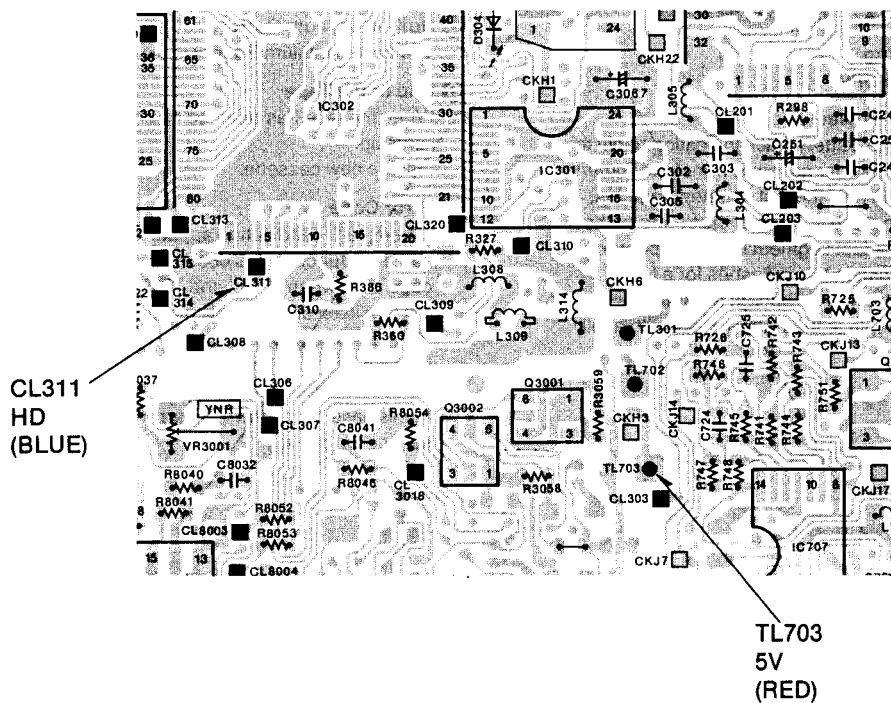
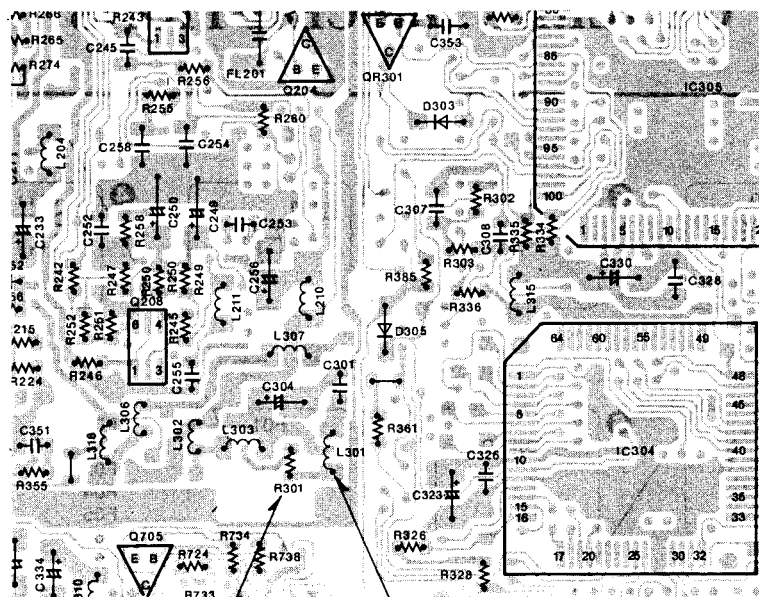


Fig. L3

SECTION 2 ADJUSTMENT PROCEDURES

2-1. DISASSEMBLY PROCEDURES

2-1-1. DISASSEMBLY FLOW CHART

The following flow chart describes the steps for removing cabinet parts and printed circuit boards to gain access to the items needing service. To reassemble the unit, follow the steps in reverse order.

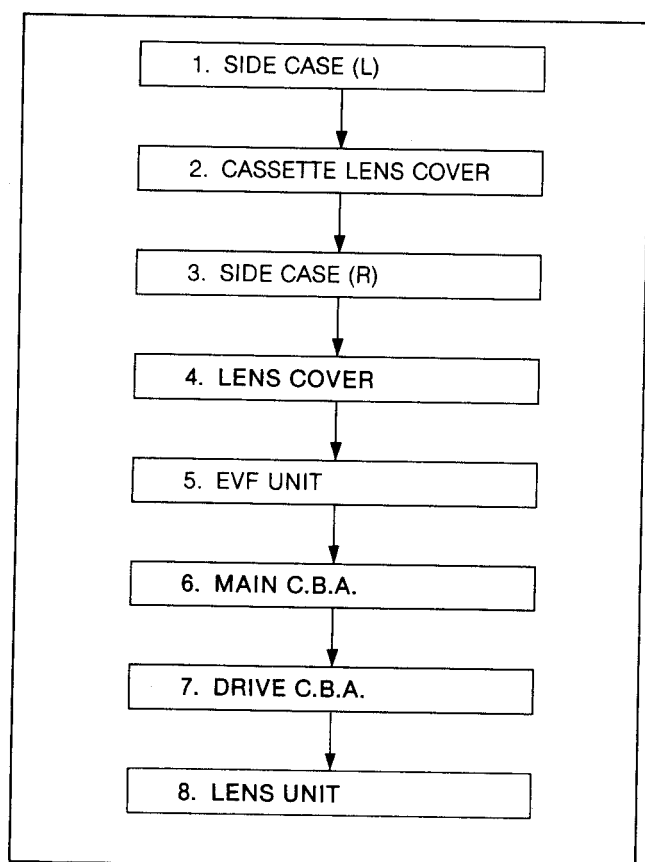


Fig. D1

2-1-2. DETAILED DISASSEMBLY METHOD

1. Removal of Side Case (L).

(See Fig. D2 ①.)

(1). Remove Screw(B) and Screw(C).

(See Fig. D2 ②.)

(2). Remove 2 Screws(E) and 2 Screws(G).

(See Fig. D2 ③.)

(3). Remove 3 Screws(H).

(See Fig. D2 ④.)

(4). Remove Screw(I).

(See next page.)

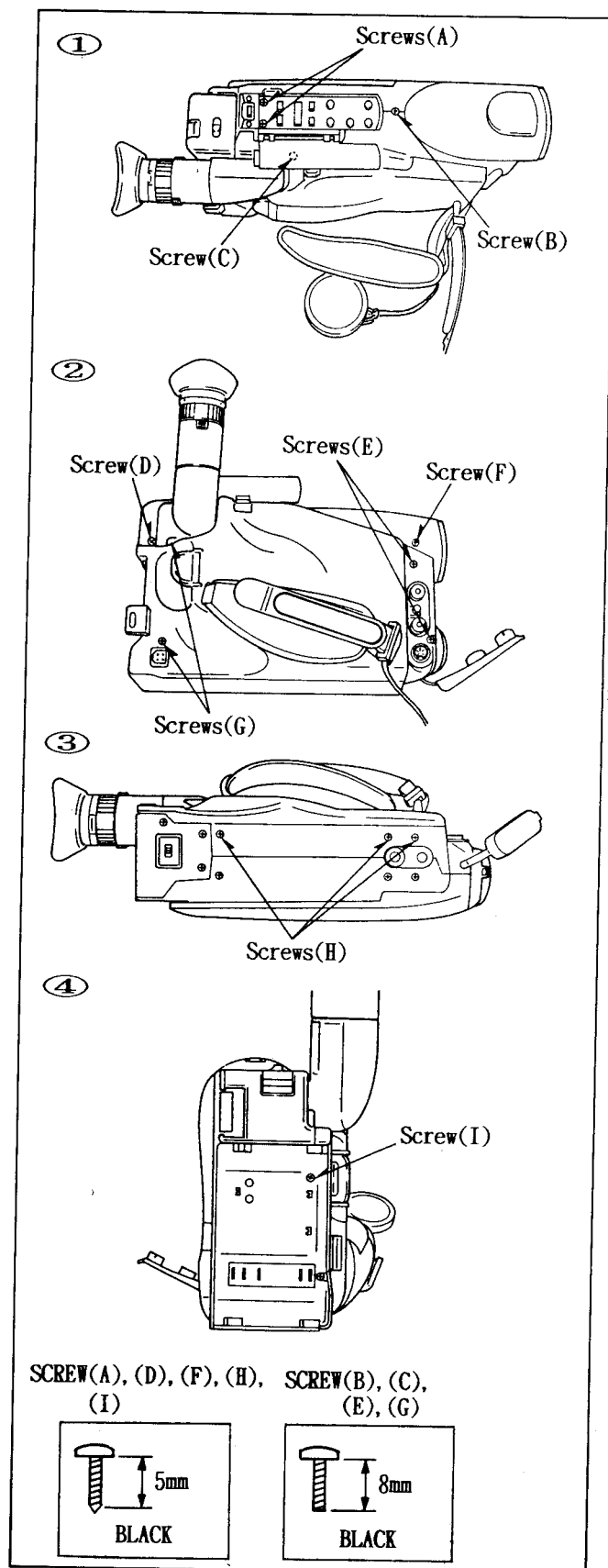


Fig. D2

(See Fig.D3.)

--<<Be careful Connector (A) and (B)!!>>-----

(5).Slightly open the side case (L).

(6).Disconnect Connector(A) and Connector(B).

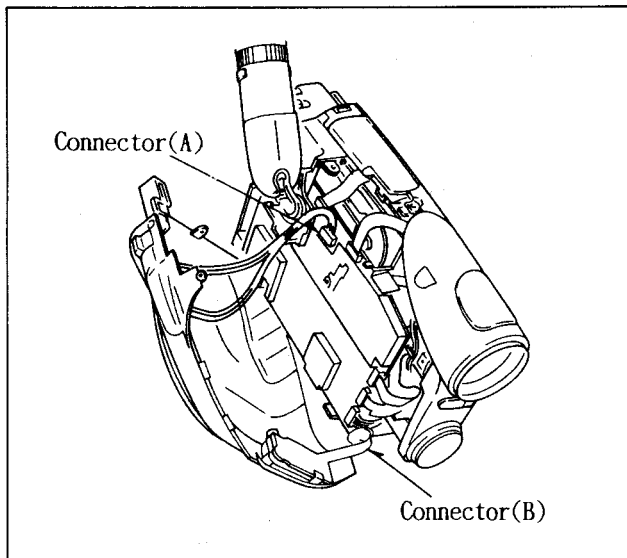


Fig. D3

Note:

*. Be careful that you do not break the Cables and Connectors.

2. Removal of cassette cover.

(See Fig. D4.)

(1). Remove.....2 Screws(J).

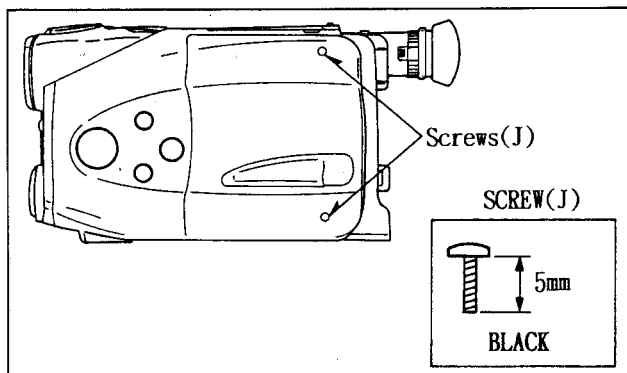


Fig. D4

3. Removal of side case (R)

NOTE:

*. To make easy disassemble, do (1) and (2).

(See Fig. D5 ①)

(1). Removal.....Screw(K) and Screw(L).

(2). Un-lock.....2 Locking portions(A).

(See Fig. D5 ②)

(3). Removal.....Screw(M).

(See Fig. D5 ③)

(4). Removal.....3 Screws(N).

(See Fig. D5 ①)

(5). Disconnect...Connector(C) and Connector(D).

(6). Un-lock.....Locking Tab(A).

(7). Removal of VTR Operation panel.

(8). Un-lock.....3 Locking Tabs(B).

NOTE:

*. Be careful that un-locking of Tab(A) and Tabs(B). These 4 Locking Tabs are hard attached.

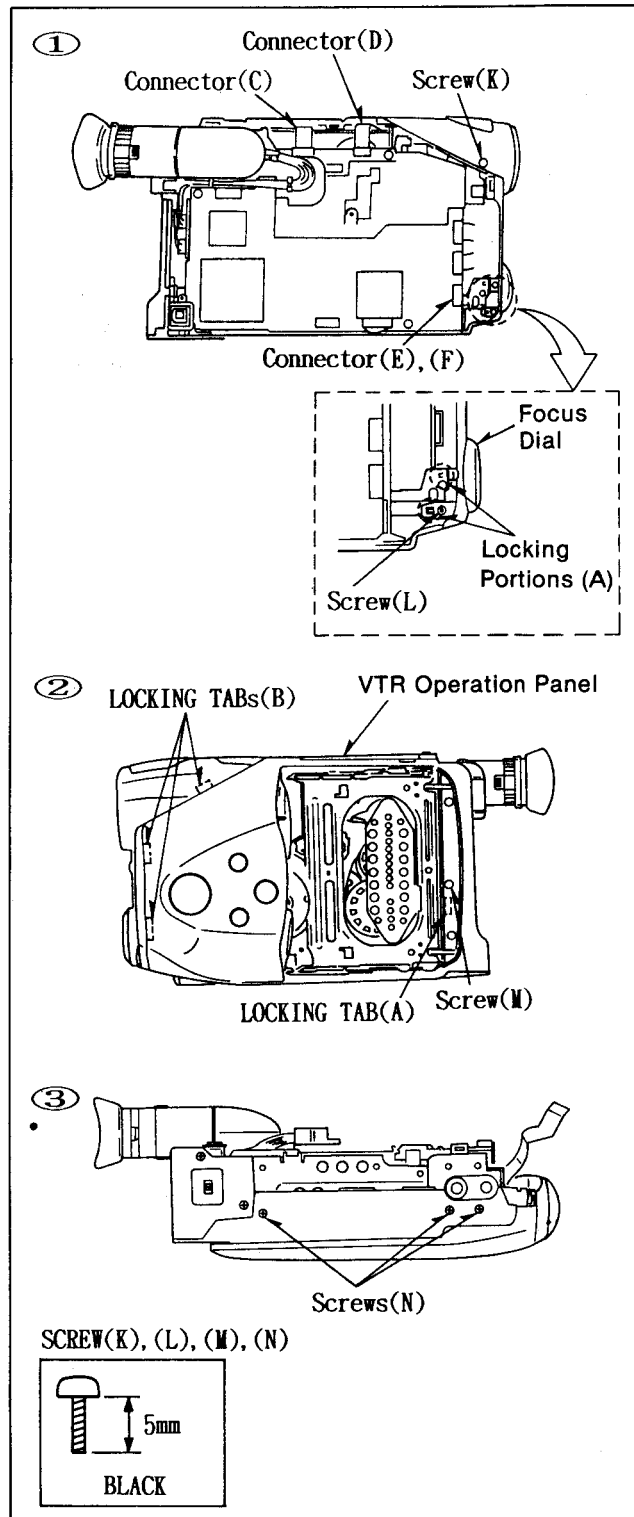


Fig. D5

4. Removal of Lens cover Unit

(See Fig. D5 ①)

- (1). Disconnect.... Connector(C) and Connector(D).
- (2). Remove.....Screw(K) and Screw(L)
- (3). Un-lock.....Locking portion(A).

5. Removal of EVF Unit

(See Fig. D6 ①)

- (1). Remove.....Screw(O) and Screw(P).

(See Fig. D2 ②)

- (2). Remove.....Screw(Q).

(See Fig. D6 ②)

- (3). Disconnect.....Connector(E).

(See Fig. D6 ②)

- (4). Locking Portion...Locking portion(B).

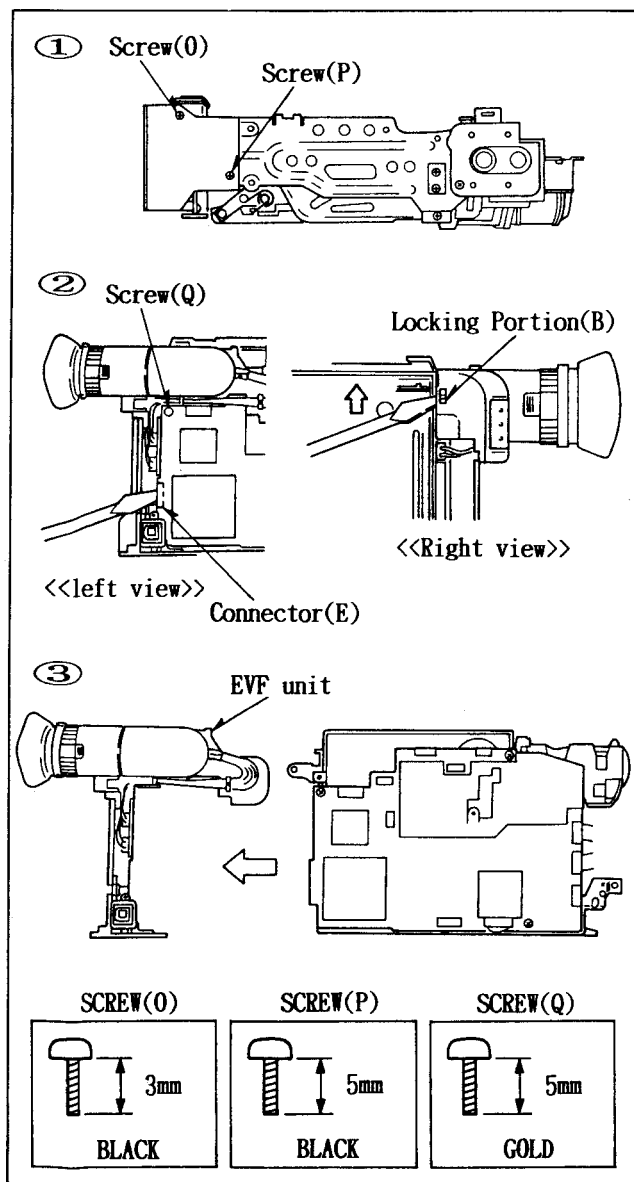


Fig. D6

6. Removal of Main C.B.A.

(See Fig. D7 ①)

- (1). Remove.....2 Screws(R)
 - (2). Connector....Connector(F), (G), (H), (I)and (J).
- (See Fig. D7 ②)
- (3). Connector....Connector(K).

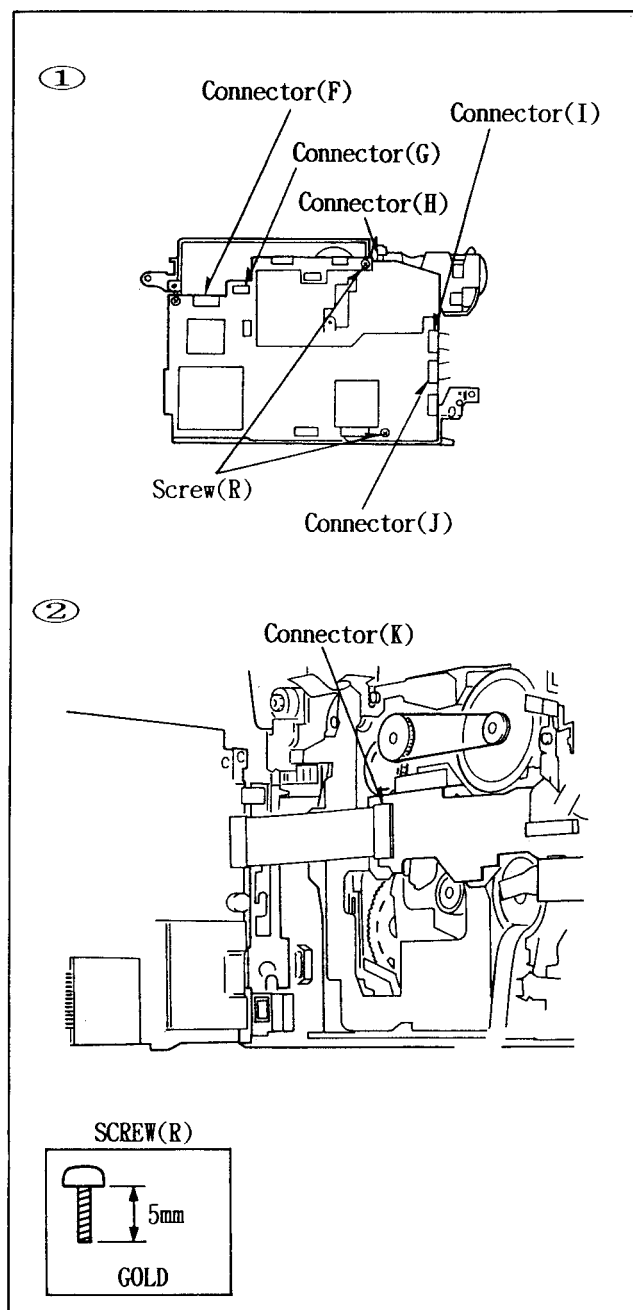


Fig. D7

7. Removal of Drive C.B.A.

(See Fig. D8)

- (1). Remove..... 2 Screws(S)
- (2). Connector.... Connector(L) and (M).

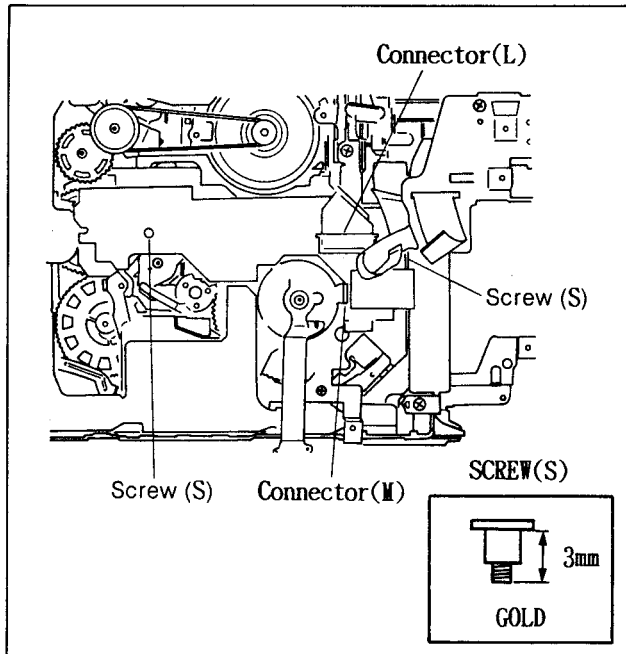


Fig. D8

8. Removal of lens Unit.

(See Fig. D9)

- (1). Remove..... Screw(T) and Screw(U).

Note:

Be careful that you do not break the Flexible cards.

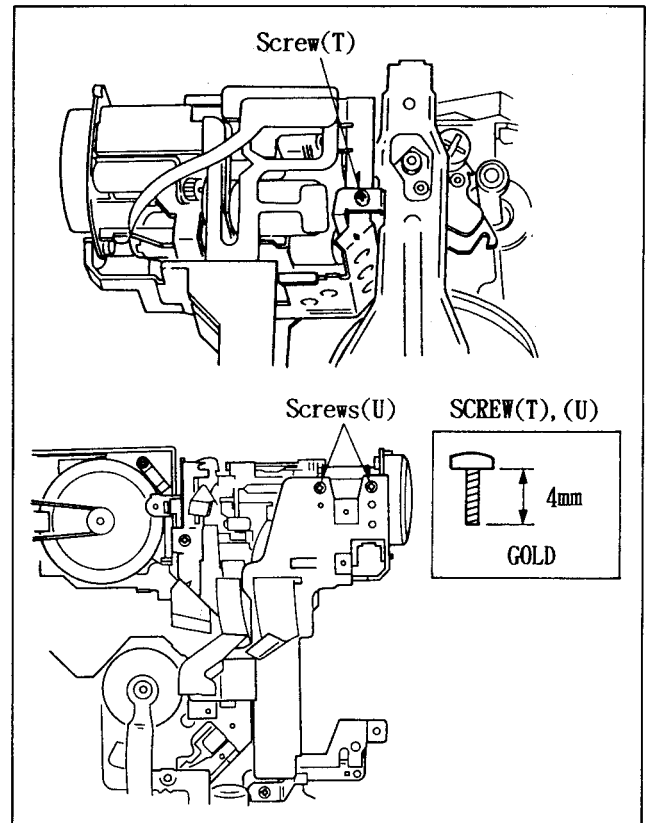


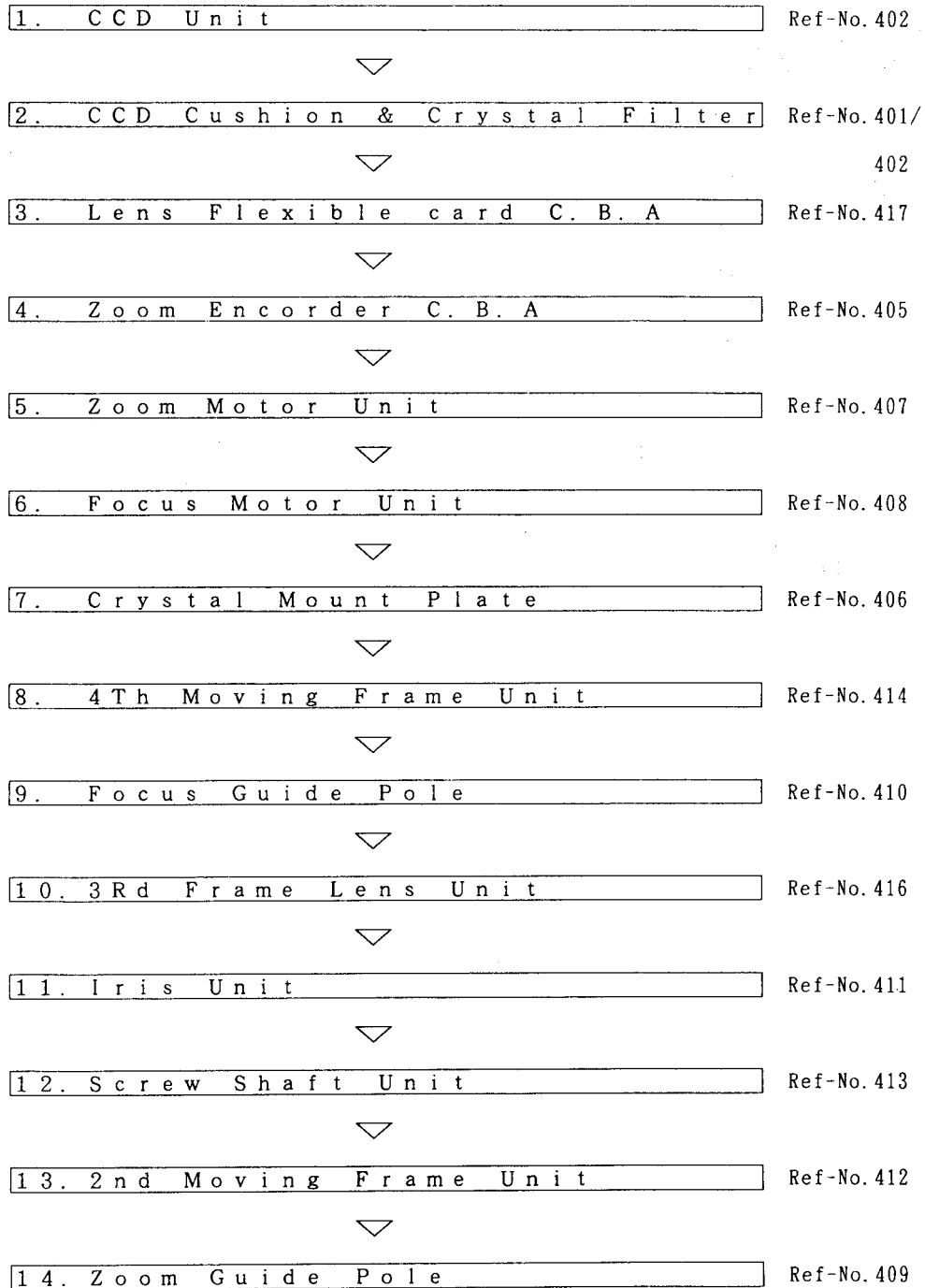
Fig. D9

2-2. DISASSEMBLY PROCEDURES OF LENS UNIT

The following flowchart describes order or steps

for removing the Lens Units and certain printed circuit boards in order to make access to the item needing service.

To reassemble the unit follow the steps in reverse order.



Note: Each Ref-numbers are equivalent to number on Fig L2 and Parts-List.

Fig. L1

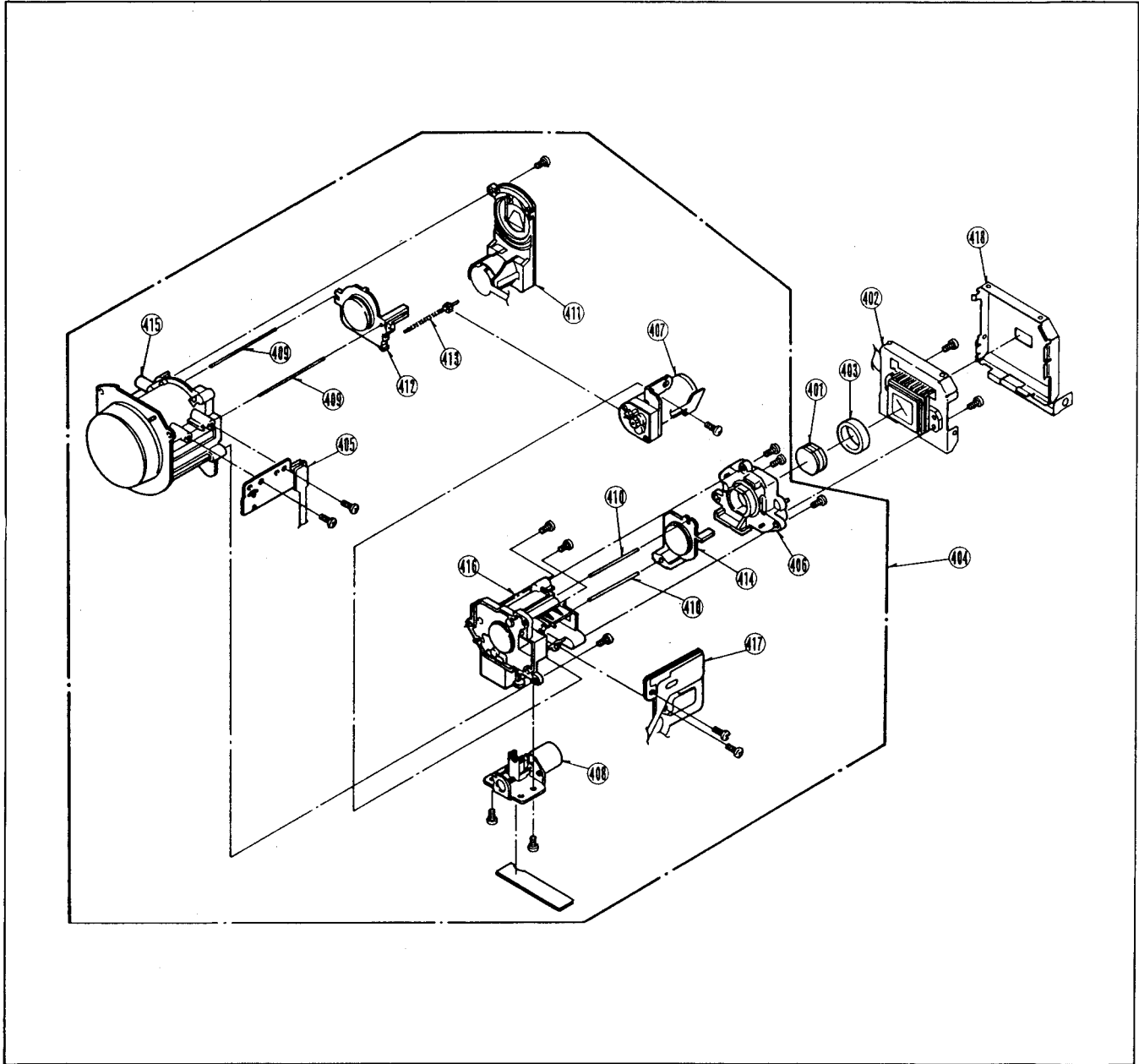


Fig. L2

2-3. DISASSEMBLY PROCEDURES OF MECHANISM

1. Removal of Cassette Holder Unit.

- (1) Unsolder following flexible connectors on the bottom side.
- (1) FLEXIBLE CONNECTOR TO SUPPLY PHOTO TR.
- (2) FLEXIBLE CONNECTOR TO TAKE UP PHOTO TR.
- (3) FLEXIBLE CONNECTOR TO LOADING MOTOR.
- (4) FLEXIBLE CONNECTOR TO SENSOR LED.

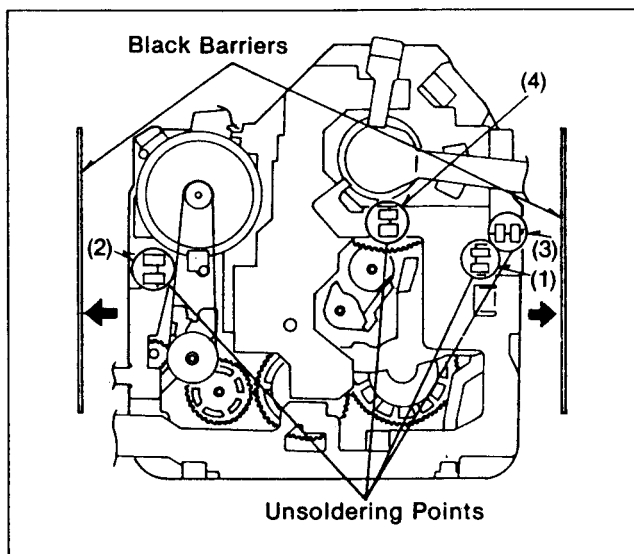


Fig. M1

- (2) Remove 4 red screws indicated below.

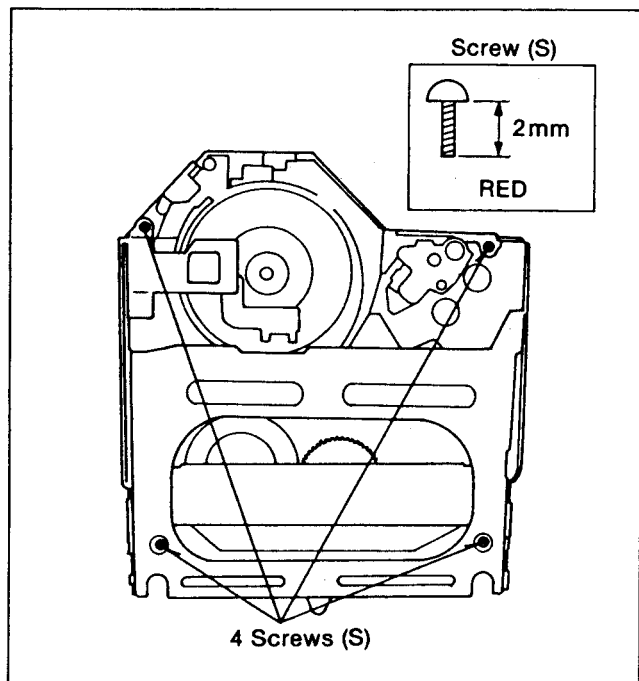


Fig. M2

- (3) Release Eject Lock Lever and take out Cassette Holder Unit.

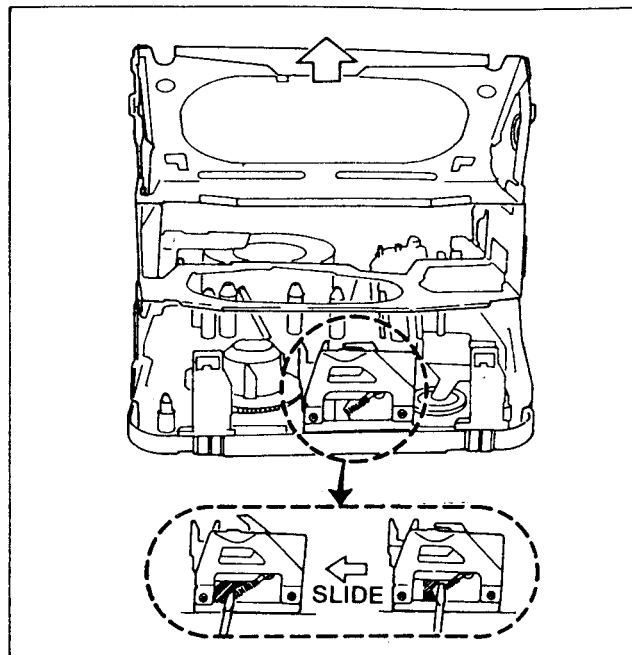


Fig. M3

2. REMOVAL OF DD CYLINDER UNIT.

Note: *

Upper Cylinder Unit is not replaceable on it's own. The DD Cylinder is only available as a unit.

- (1) Remove RT (Rotary Transformer) Connector using a screw driver.
- (2) Remove 3 screws to take out DD Cylinder Unit.

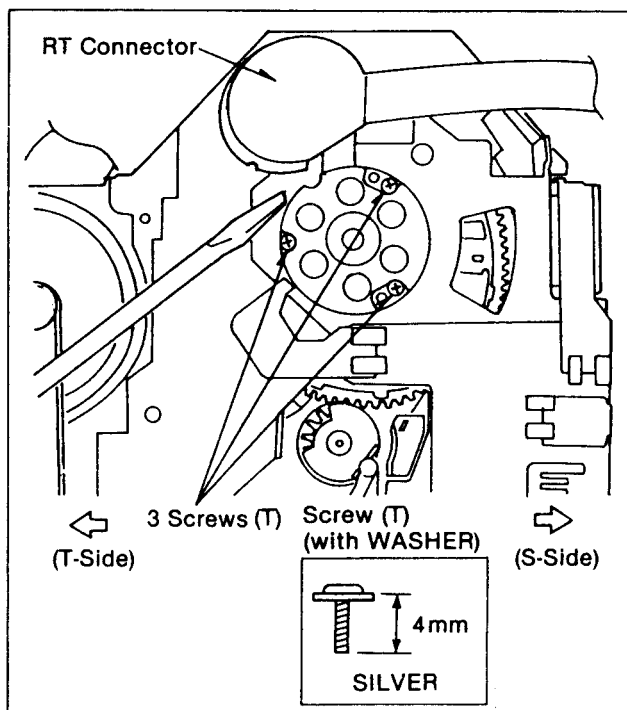


Fig. M4

3. REMOVAL OF S-RAIL UNIT, LOADING MOTOR UNIT & TENSION REGULATOR UNIT.

- (1) Move tape loading Posts(S1, T1 and T2) half way in the tape loading direction by applying 1.5DC to Loading Motor.

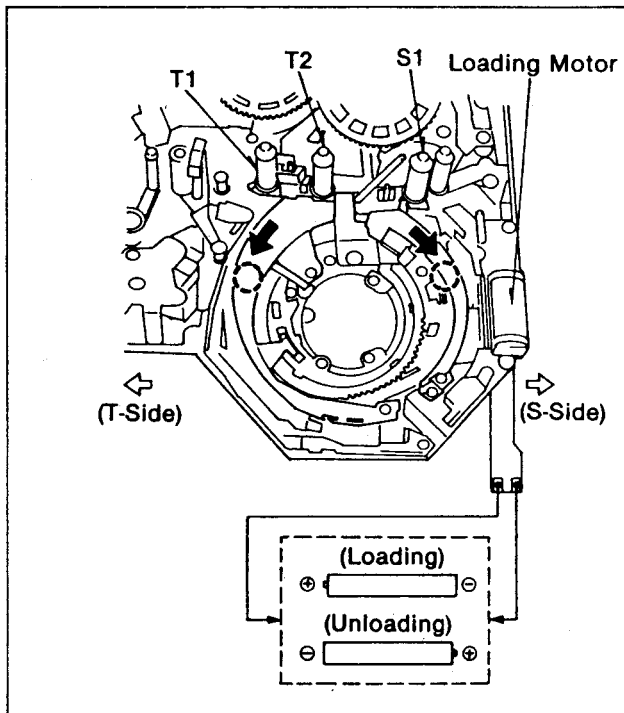


Fig. M5

- (2) Remove 2 screws and take out S-Rail Unit.

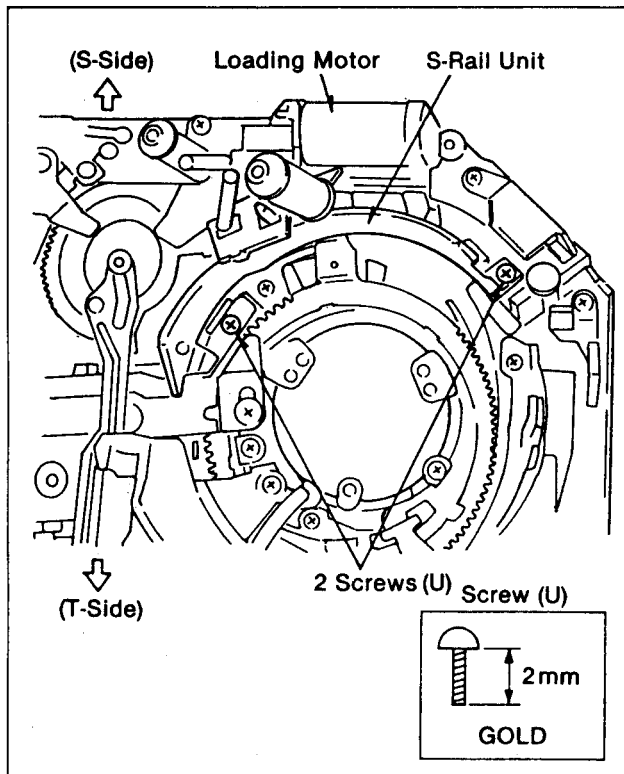


Fig. M6

- (3) Remove 2 screws (Slightly move Loading Posts in the unloading direction.) and take out Loading Motor Unit.
- (4) Unhook the spring (* Remember the original hooking position for reinstallation later), remove a washer and take out Tension Regulator Unit. Don't lose a spacer underneath.

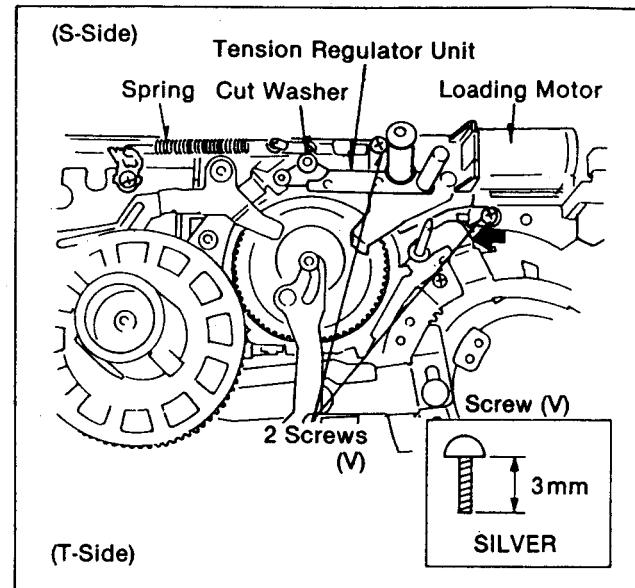


Fig. M7

4. REMOVAL OF SUPPLY REEL TABLE, EJECT LEVER UNIT AND PAD ARM.

- (1) Remove a washer and take out Supply Reel Table. Don't lose a spacer underneath.

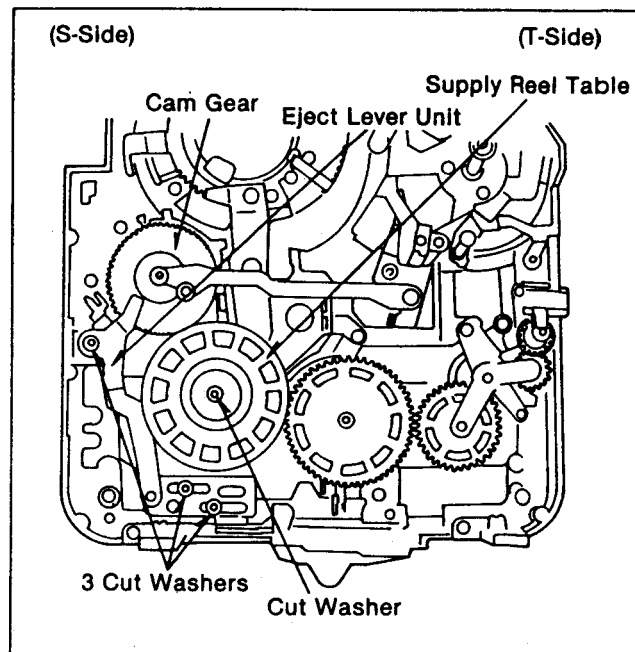


Fig. M8

- (2) Remove 3 washers, 2 screws on Eject Lock Base to make clearance (* Eject Lock Base is soldered on the flexible P.C. Board.) to take out Eject Lock Lever.

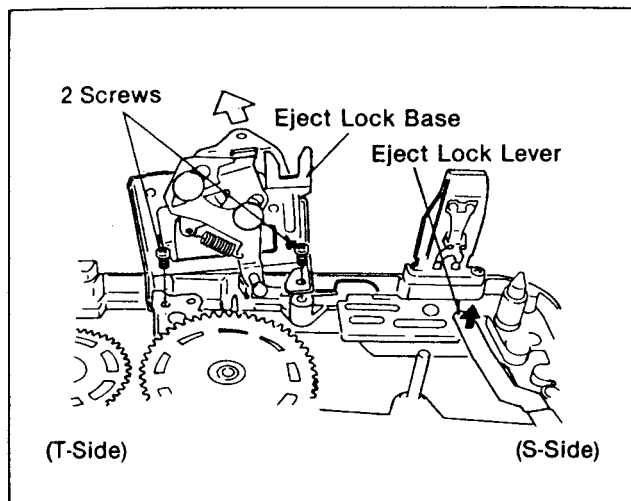


Fig. M9

- (4) Remove a washer and take out Pad Arm.

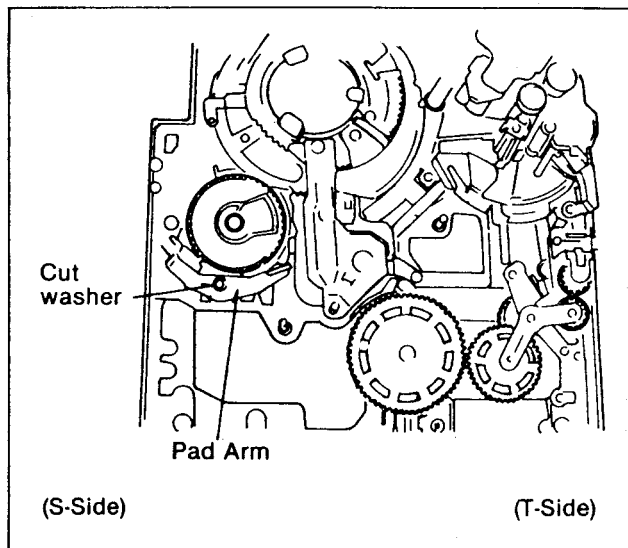


Fig. M11

- (3) Remove 2 washers, pull Pinch Drive Arm to the left (S-side) and take it out.

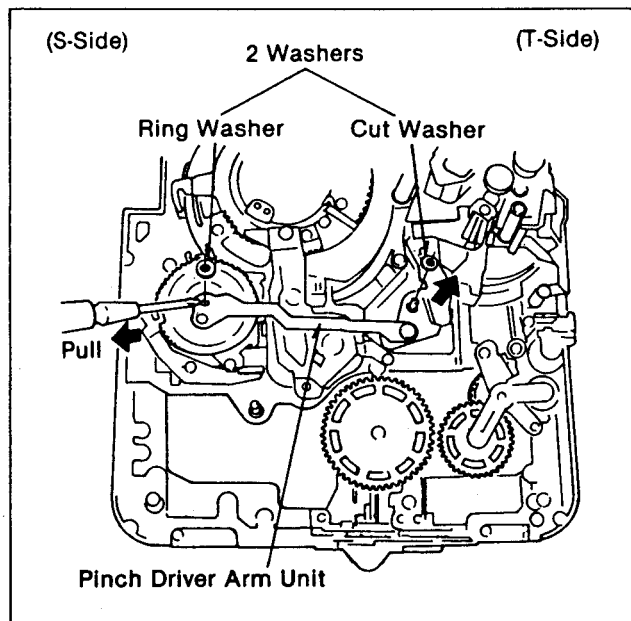


Fig. M10

5. REMOVAL OF T-RAIL UNIT, SWING ARM UNIT, LOADING UNIT AND MODE SW UNIT

- (1) Remove 2 screws and take out T-Rail Unit.
(* Flexible Connector of Sensor LED has to be unsoldered on the bottom side.)

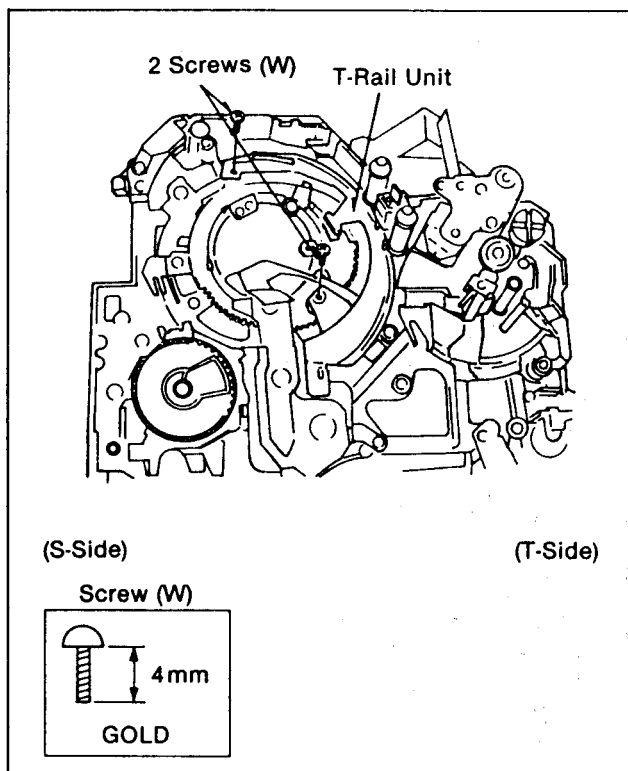


Fig. M12

Caution:

Do not touch inside cam Gear and keep the cam Gear away from grease and dusts.

- (2) Remove 2 screws, take out Holder Angle and Swing Arm Unit.

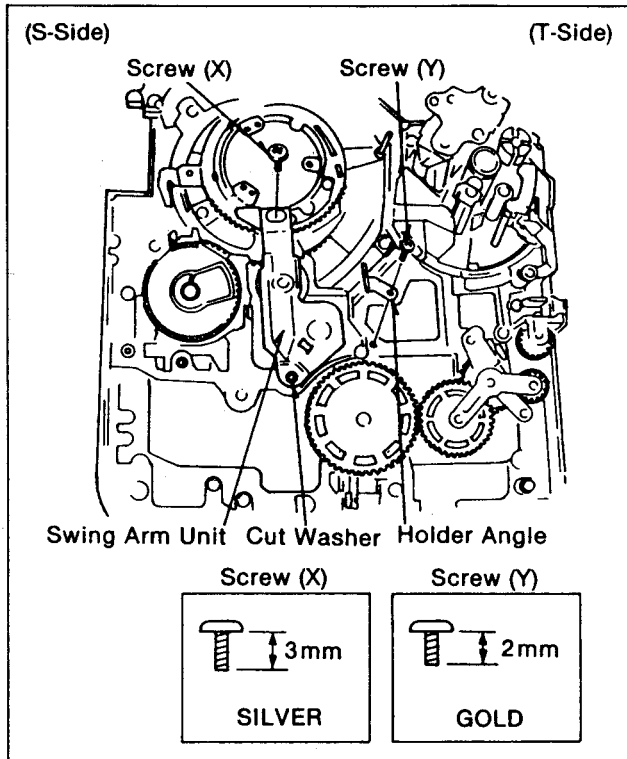


Fig. M13

- (3) Remove 5 screws.
(4) Loosen Screw (a) to make a clearance and take out Loading Unit.

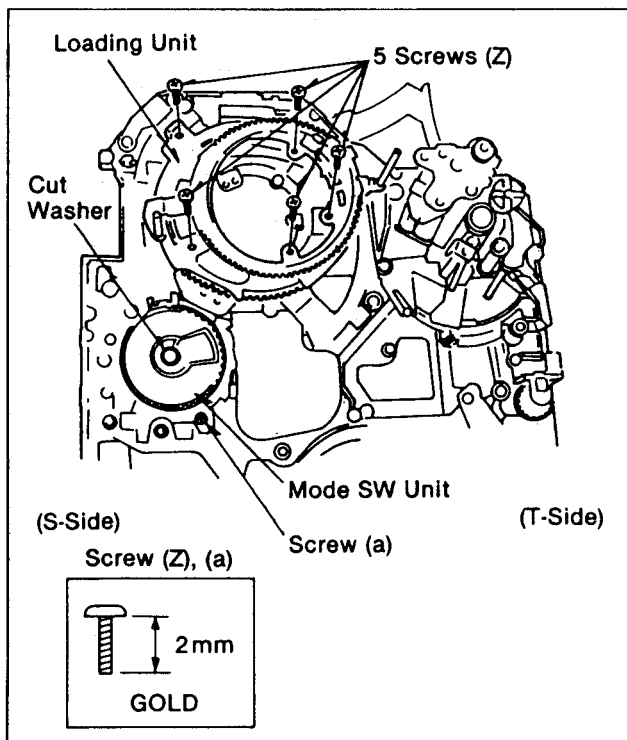


Fig. M14

- (5) Remove screw (a) and cut washer to take out mode SW unit. (*Mode SW Base is soldered on the flexible P.C. Board).

2-4. ASSEMBLY AND PHASE ADJUSTMENT PROCEDURES OF MECHANISM

1. ASSEMBLY AND PHASE ADJUSTMENT OF LOADING UNIT.

- (1) Install Loading Unit and tighten 5 screws.
(2) Adjust mechanical phase so that phase marks (See-through holes) meet on both supply and take up sides as shown below.

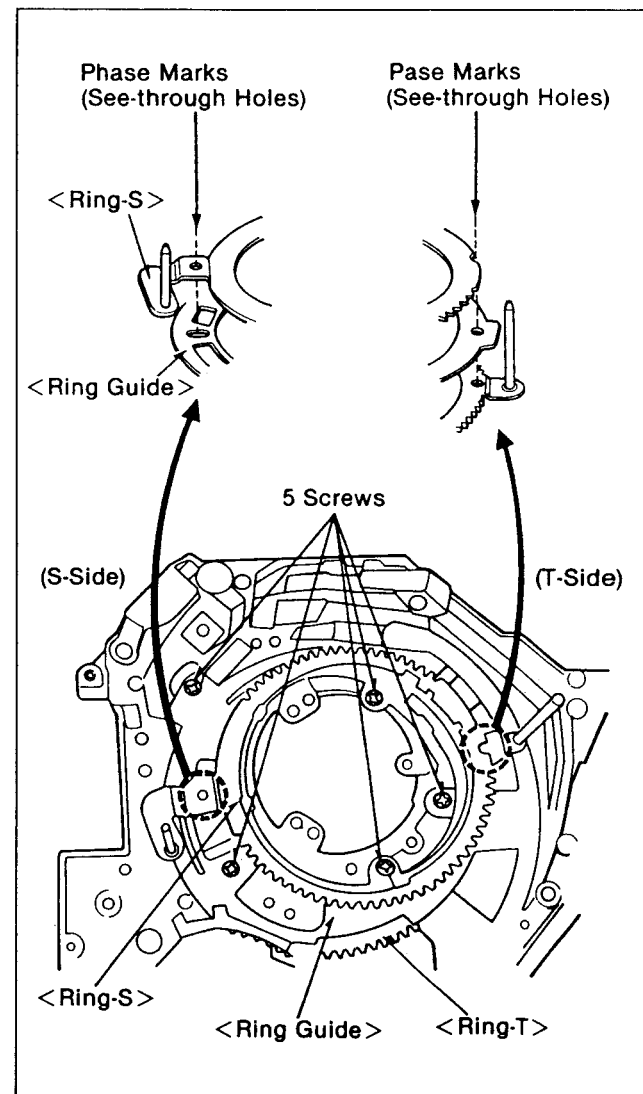


Fig. M15

2. ASSEMBLY AND PHASE ADJUSTMENT OF CAM GEAR.

- (1) Install Cam Gear so that uneven cog portion meets the phase mark on the chassis and put the washer.

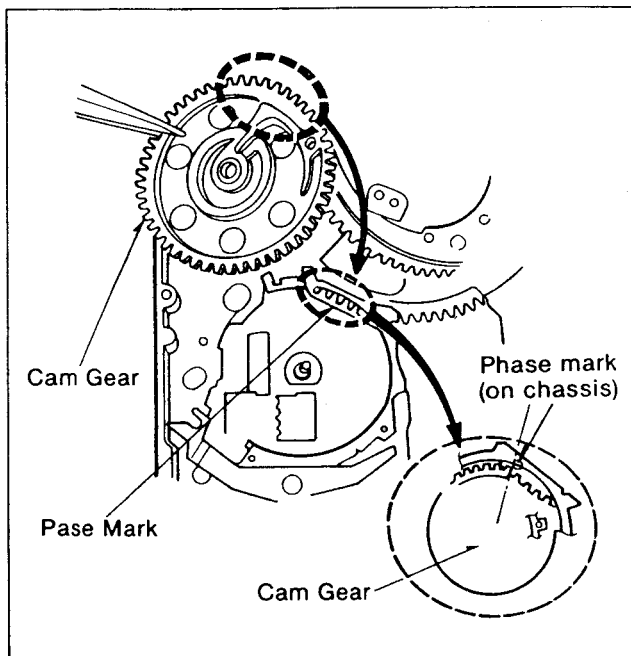


Fig. M16

3. ASSEMBLY OF PENDULUM ARM UNIT

- (1) Install Swing Arm Unit and tighten 2 screws with the holder angle.
- (2) Confirm that the phase mark on Loading Ring-T can be seen through the square cutout of Swing Arm Unit. The phase mark of Swing Arm Unit (V- cutout) aligns with the phase mark on Loading Ring-S Unit on the bottom side. There phase marks should be in the correct positions, if the previous phase adjustments have been done correctly.

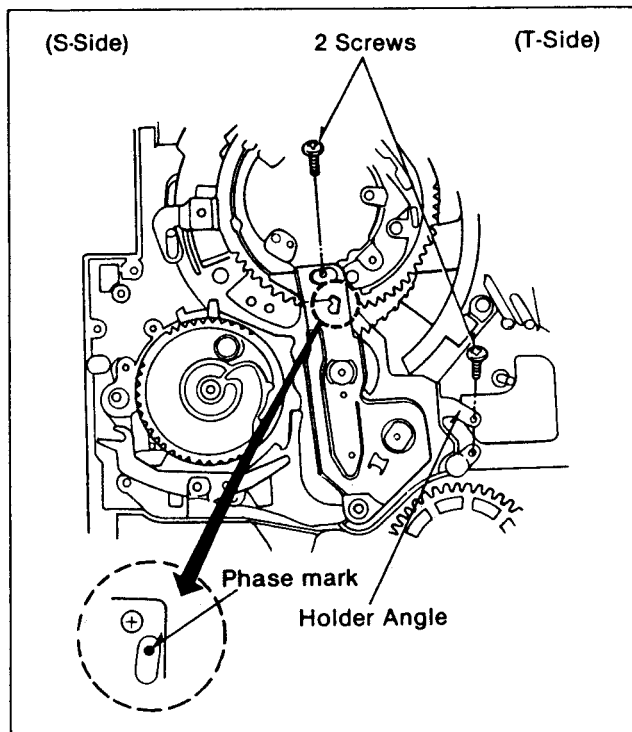


Fig. M17

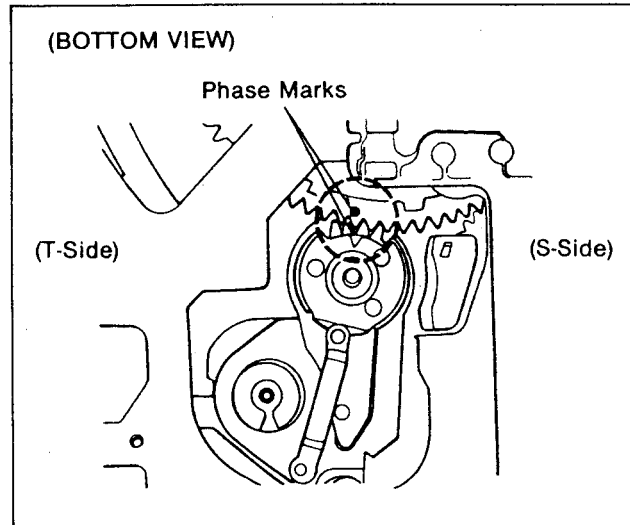


Fig. M18

4. ASSEMBLY OF LOADING UNIT PINCH DRIVE ARM UNIT AND CONFIRMATION OF MECHANICAL MOVEMENT

- (1) Install Loading Motor Unit and tighten one screw. (one more screw has to be tightened after installing Pinch Drive Arm Unit)

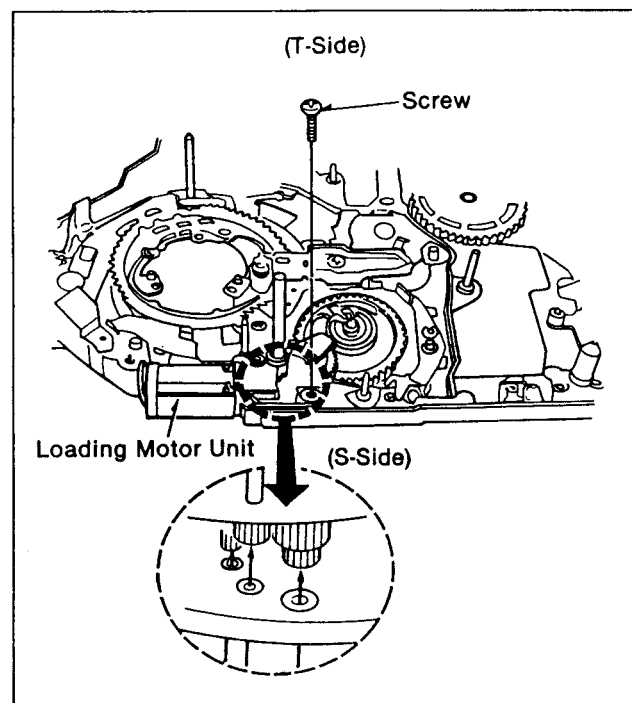


Fig. M19

- (2) Install Pinch Drive Arm Unit and put on washer (A).

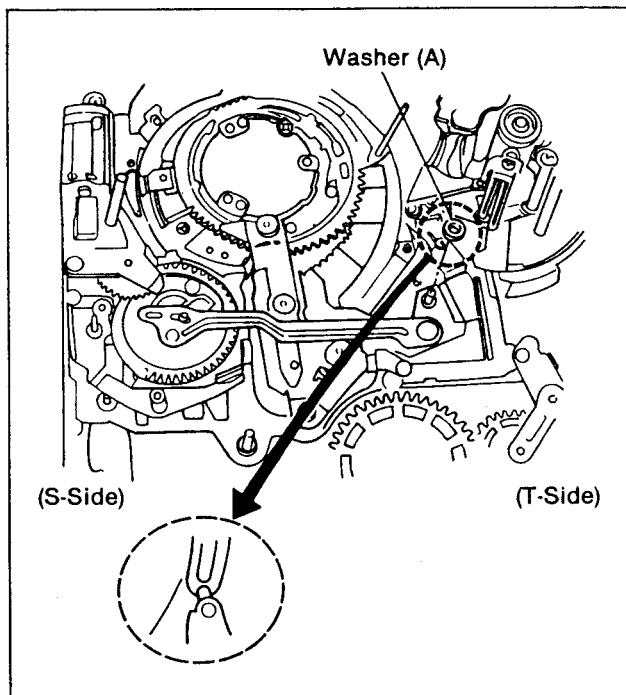


Fig. M20

- (3) Move Pinch Roller to the unloading position by finger and put on washer (B).

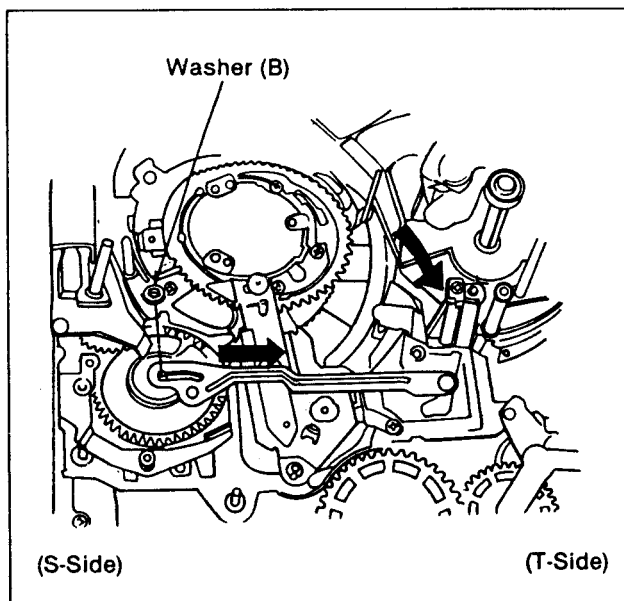


Fig. M21

- (4) Slightly move Loading Ring-S in the unloading direction by applying 1.5VDC to Loading Motor and tighten the screw.

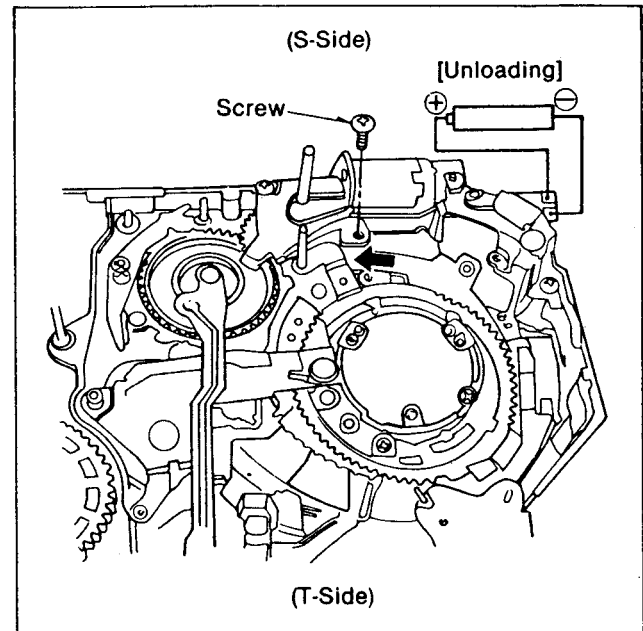


Fig. M22

- (5) Confirmation of Mechanical Movement and phase. In this condition, check that the mechanism smoothly moves in both loading and unloading directions by changing the polarity of the battery. After that, move the mechanism back to the phase adjustment position and confirm all phase marks come to the correct position.

5. ASSEMBLY OF S-RAIL UNIT AND T-RAIL UNIT

- (1) Install S-Rail Unit passing Link Post of Ring-S through the linking hole of the S-Rail Unit, and tighten 2 screws.

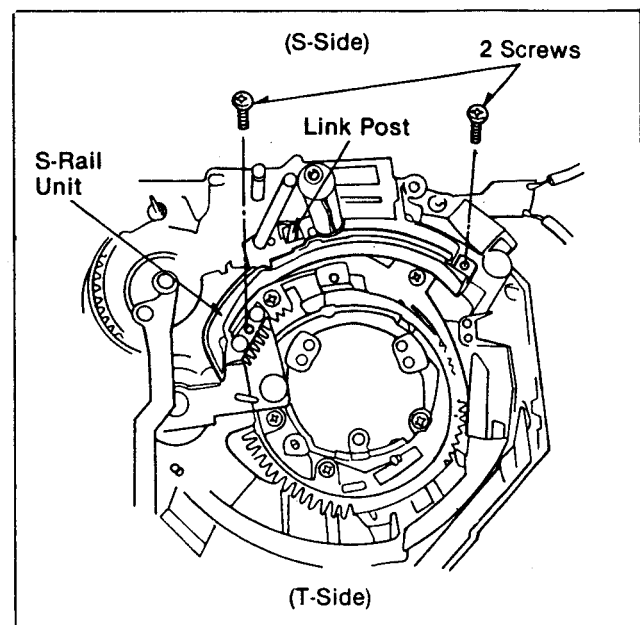


Fig. M23

- (2) Install T-Rail Unit the same way and tighten 2 screws.
- (3) Solder the flexible connector of Sensor LED on the bottom side.

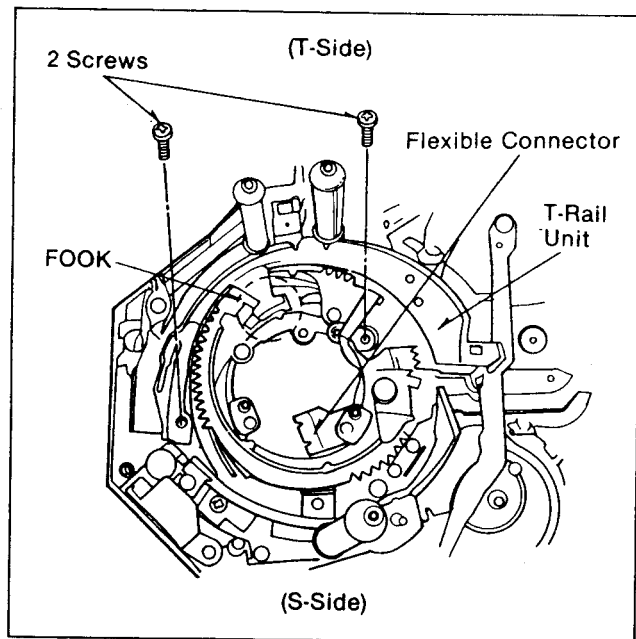


Fig. M24

7. ASSEMBLY OF TENSION REGULATOR UNIT.

- (1) Install Tension Regulator Unit so that the guide arm fits in outer inside of Cam Gear.
- (2) Put on washer and hook Tension Spring in the original position.

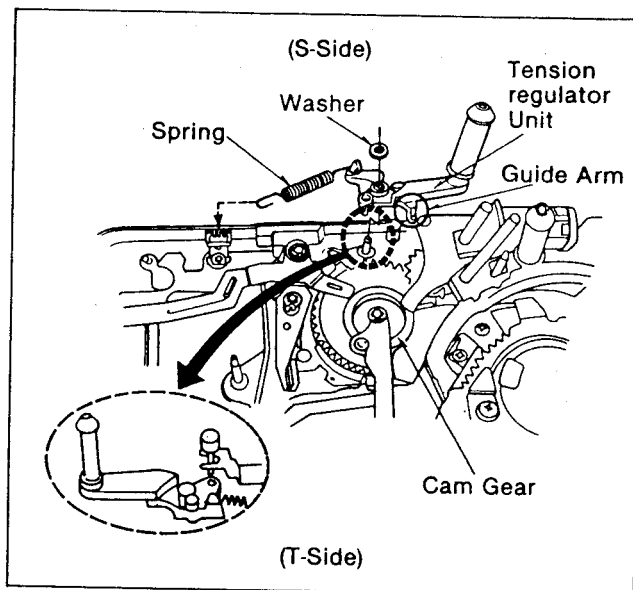


Fig. M26

6. ASSEMBLY OF EJECT LEVER UNIT

- (1) Install Eject Lever Unit and link the arm with Eject Lock Base.
- (2) Fix Eject Lock Base with 2 screws and Eject Lever Unit with 3 washers.

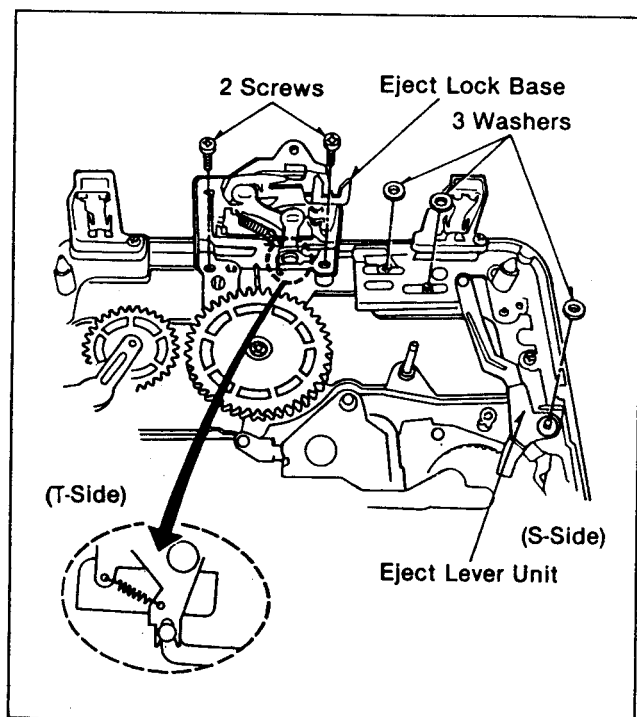


Fig. M25

8. ASSEMBLY OF SUPPLY REEL TABLE

- (1) Install Supply Reel Table and put on the washer.

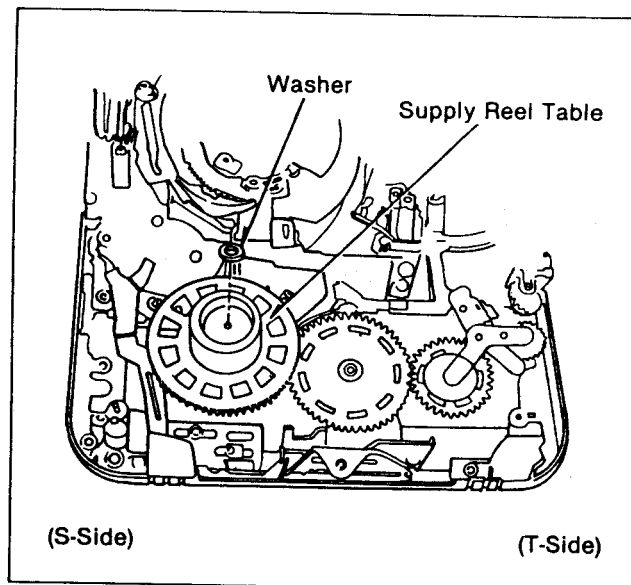


Fig. M27

9. ASSEMBLY OF DD CYLINDER UNIT

- (1) Install DD Cylinder unit so that the fixating pins fit into the fixing holes, and tighten 3 screws from the bottom side.

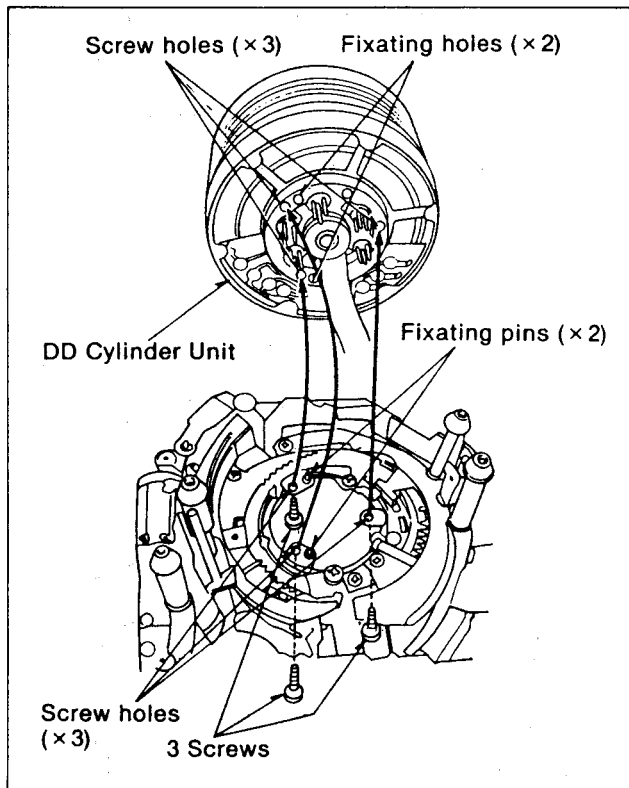


Fig. M28

11. ASSEMBLY OF CASSETTE HOLDER UNIT.

- (1) Install Cassette Holder Unit and tighten 4 red screws.
- (2) Solder flexible connectors of Supply Photo Sensor, Take up Photo Sensor and Loading Motor Unit on the bottom side.

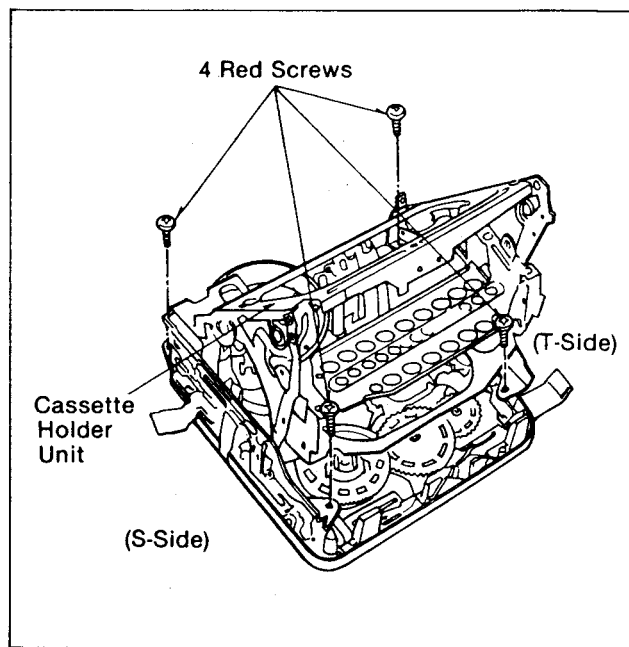


Fig. M30

10. ASSEMBLY OF RT CONNECTOR

- (1) Hold RT Connector aligning the phase mark of RT Connector (as indicated) to the phase mark on the chassis.
- (2) Carefully Install the RT Connector passing lead pins of DD Cylinder Unit through each corresponding hole of the RT Connector.

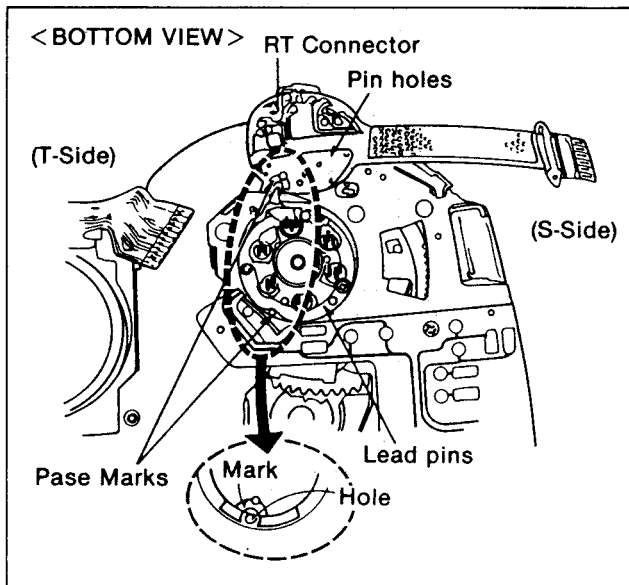


Fig. M29

2-5. INTERCHANGEABILITY ADJUSTMENT

1. BACK TENSION ADJUSTMENT

- * Equipment Required
- Tension Meter
- VHS-C Cassette Tape
- Specification $18 \pm 3 / -1.5\text{g}$ (16.5g~21g)

- (1) Play back (remove the cassette tape cover) tape.
- (2) Set Tension Meter at the measuring point and read the value.
- (3) If the value is out of specification, change the hooking position of Tension Spring.
- (4) Install Cassette Holder Unit.

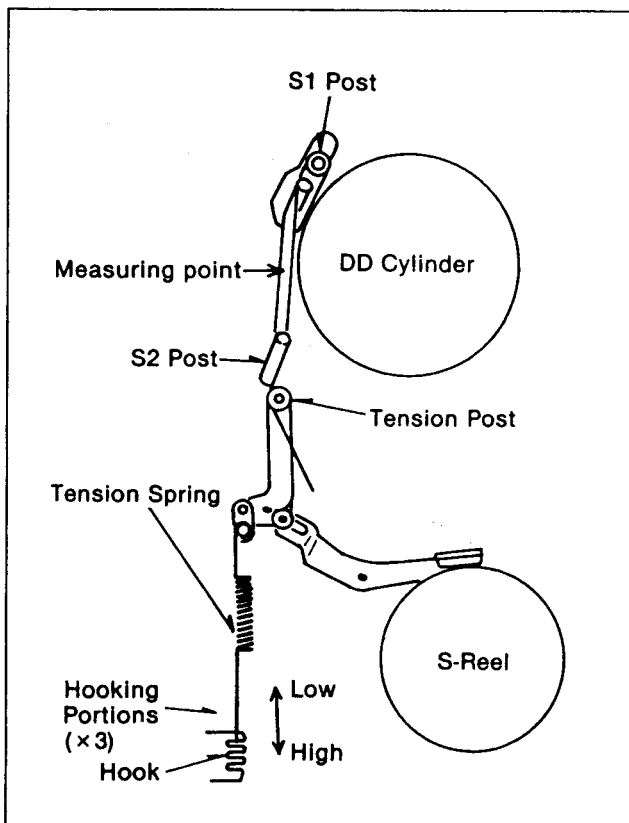


Fig. M31

2. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS AND A/C HEAD (PRELIMINARY ADJUSTMENT)

Confirmation of Tape Travel

- (1) Playback a cassette tape (remove the cassette tape cover) and check that the tape travels without curling at upper and lower guides on posts S1, T1, T2 and T3.

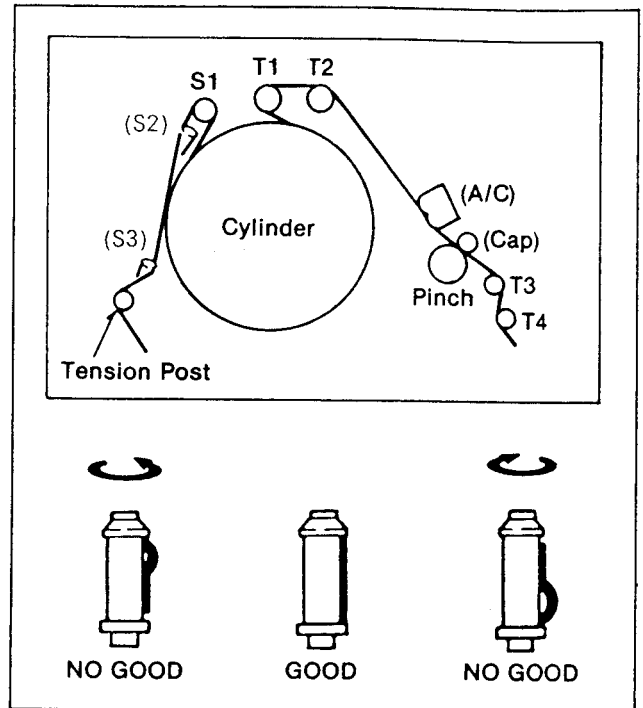


Fig. M32

- (2) If curling is apparent, adjust the height of posts by turning the top of post with a Hex Wrench.
- (3) Looking at the lower edge of the Control Head with the tape in motion, ensure that lower edge of Control Head. If it doesn't turn the A/C Head height Adjustment Nut slightly in the direction necessary to correct it.

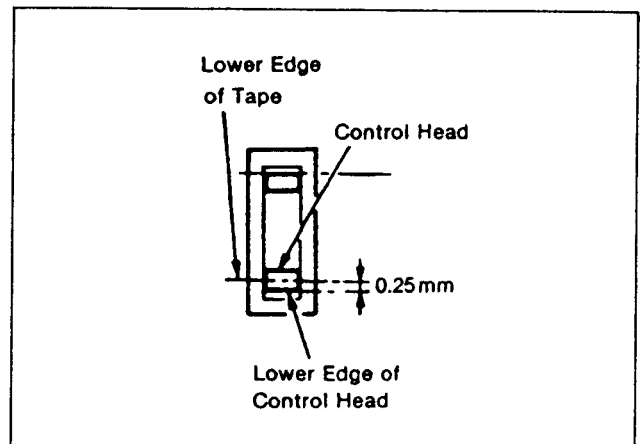


Fig. M33

3. TAPE INTERCHANEABILITY ADJUSTMENT

NOTE:

To perform these adjustments, make sure that the tracking control is set in the fixed position by Pressing both tracking Up/Down switches at the same time.

- * Equipment Required
- Dual Trace Oscilloscope
- Alignment tape (VFM8180HUPF)

[AZIMUTH ADJUSTMENT OF A/C HEAD]

- (1) Connect the oscilloscope to Audio Line Output.
- (2) Play back the Monoscope portion (6KHZ, MONO) of the Alignment tape.
- (3) Adjust the Azimuth Adjustment screw on the A/C Head Unit so that output level is at a maximum.

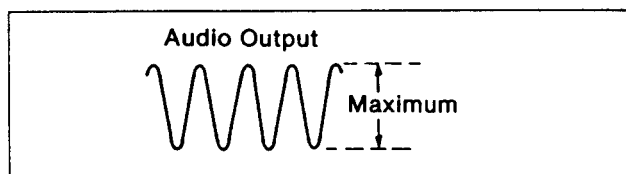


Fig. M34

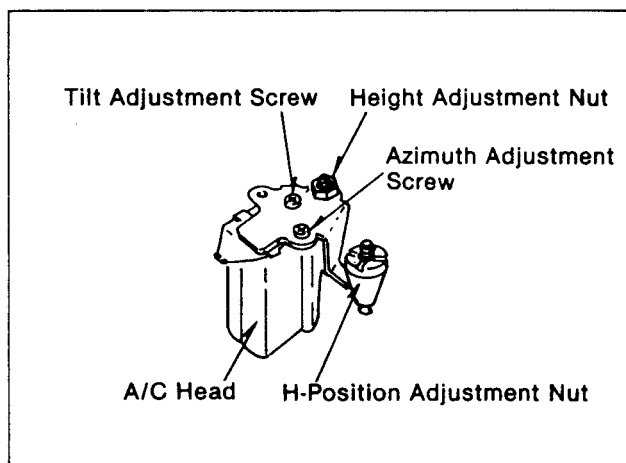


Fig. M35

[CONFIRMATION/ADJUSTMENT OF ENVELOPE]

- (1) Connect the oscilloscope to CL3004. (refer to Fig. M40)
- (2) Play back the Monoscope portion of the Alignment Tape and adjust the height of S1 and T1 posts watching the scope display so that the RF envelope becomes as flat as possible.
- (3) When the RF envelope has a Gap at the beginning of the track, adjust height of S1 post.

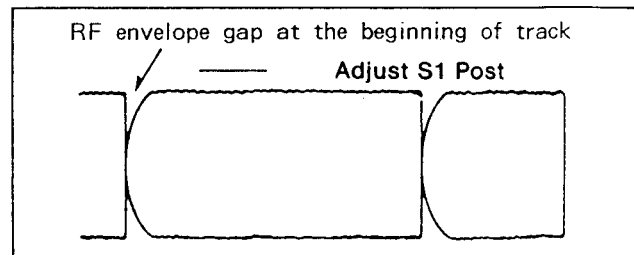


Fig. M36

- (4) When the RF envelope has a gap at the end of the track, adjust height of T1 post.

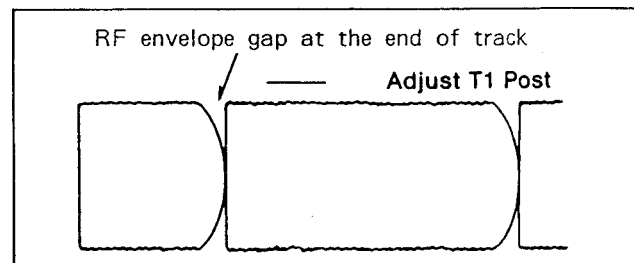


Fig. M37

- (5) When S2 and T1 Posts are adjusted properly, there is no gap of the RF Envelope at the beginning or end of the track as shown below.

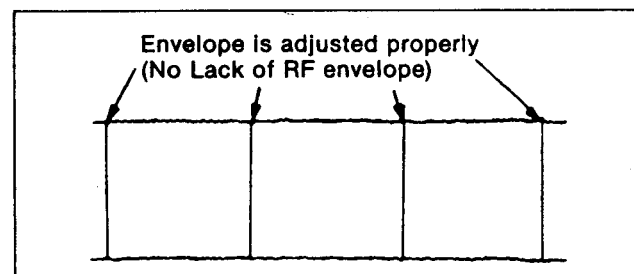


Fig. M38

[HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD]

- (1) Set the tracking control to the fixed position by pressing both tracking control UP/DOWN switches at the same time, and connect the Oscilloscope to TP8001.
- (2) Playback the monoscope portion of the alignment tape.
- (3) Adjustment horizontal position by turning H-Position Adjustment Nut so that the envelope level is at a maximum.

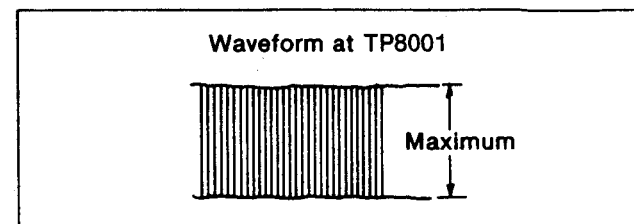
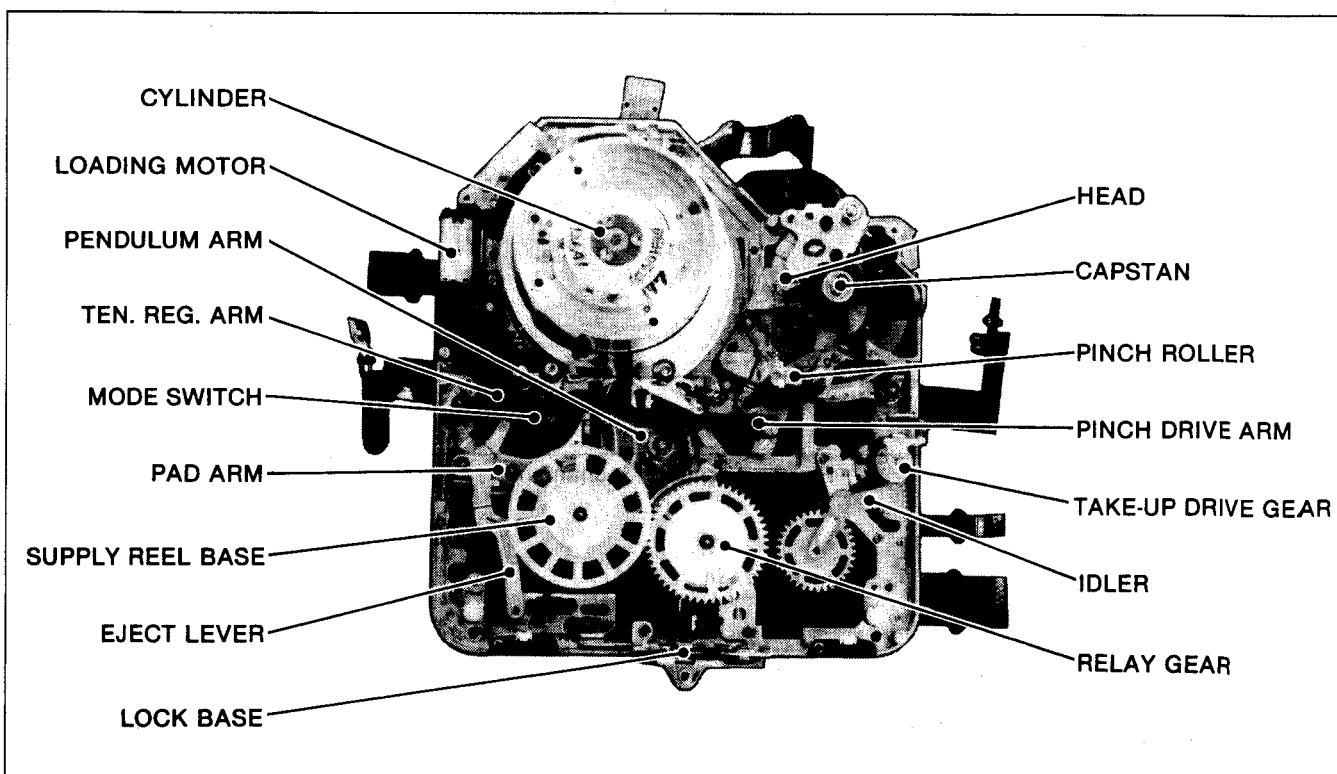
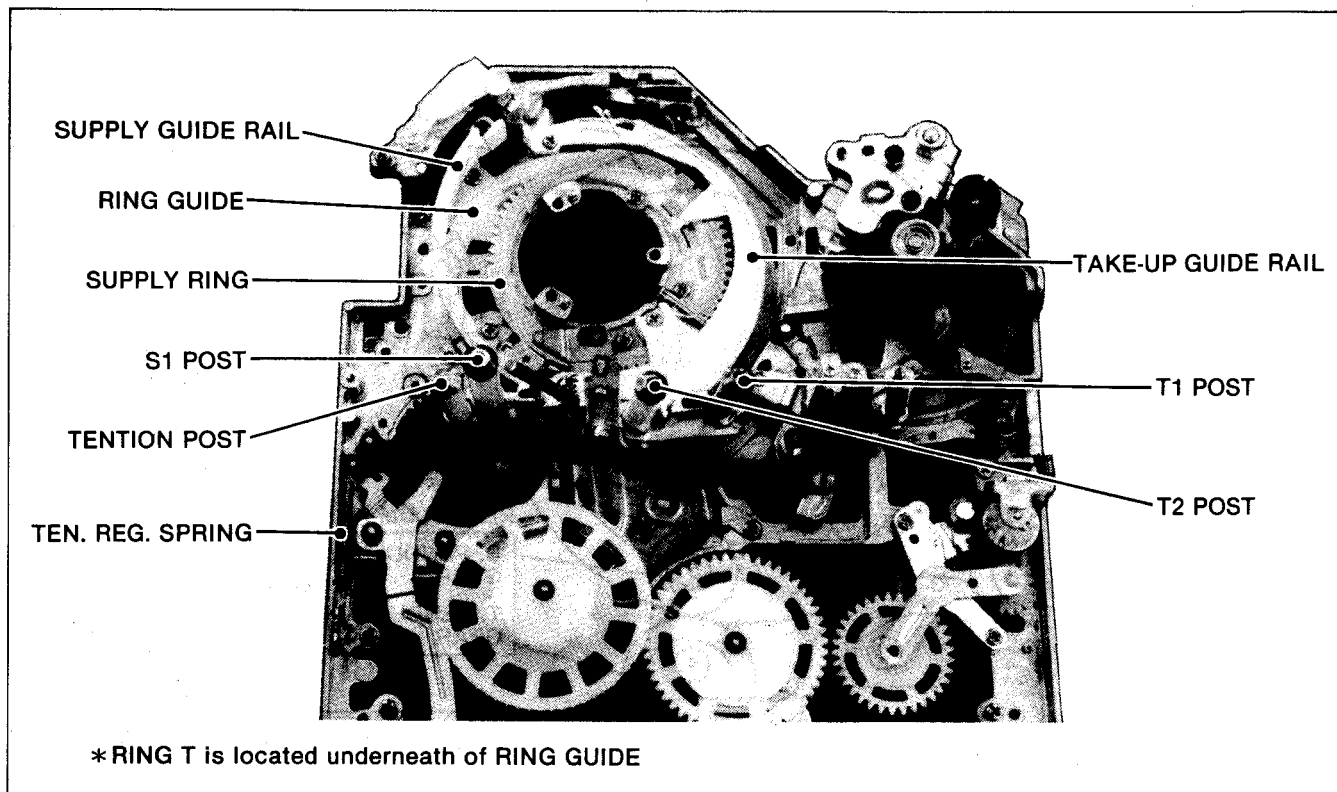


Fig. M39

1 Movement of Mechanism

1. Name of Mechanism



2. Movement to Mechanism

1. Loading operation

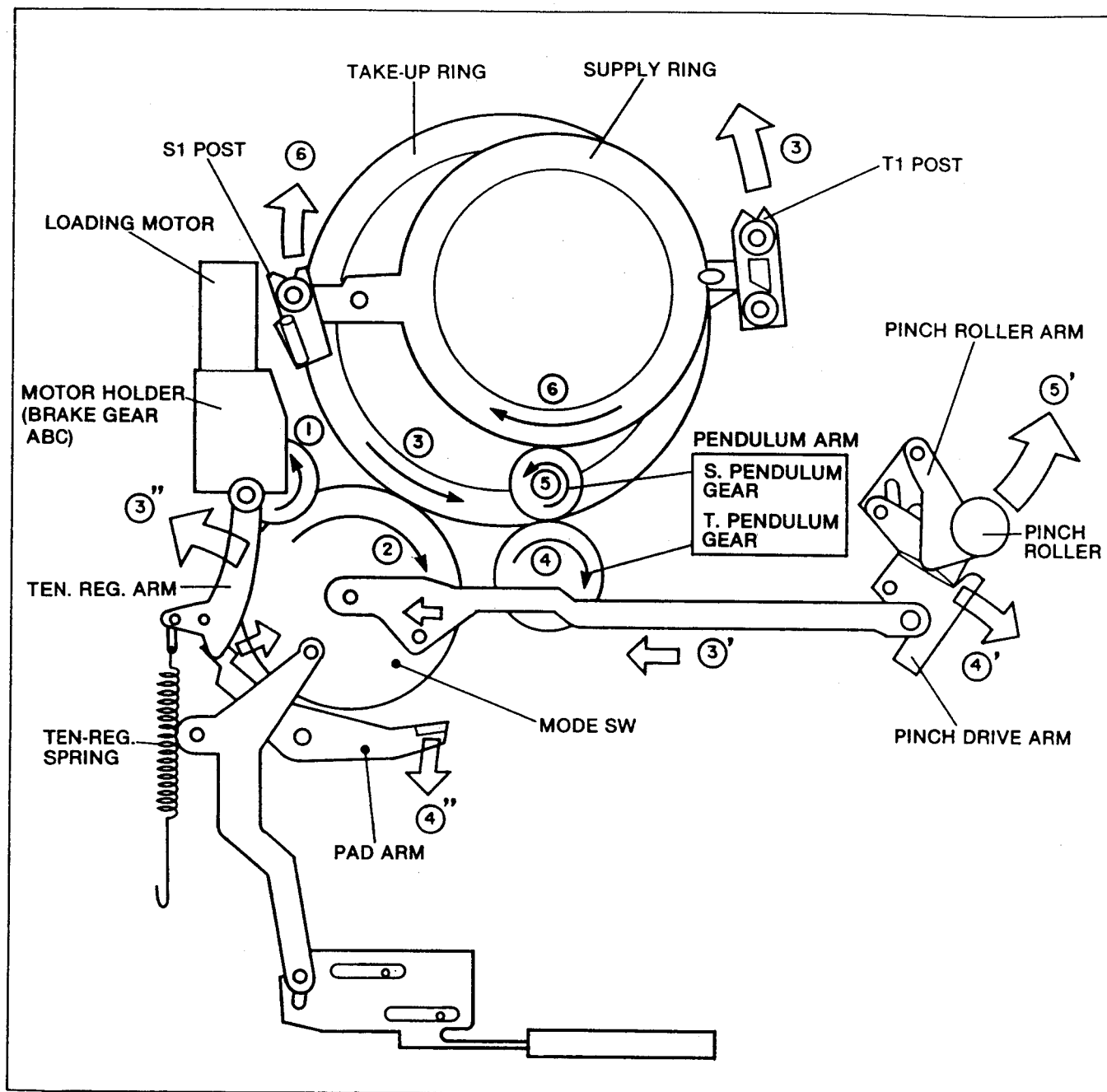


Fig. 1 Loading Mechanism

Motive power of loading motor is transferred in the direction of the arrow.

Drive of loading post.

Head Contact Pinch Roller with capstan shaft.

(Play Position)

Head Contact Pad Arm with S.Reel table.

(Play Position)

2. Eject operation

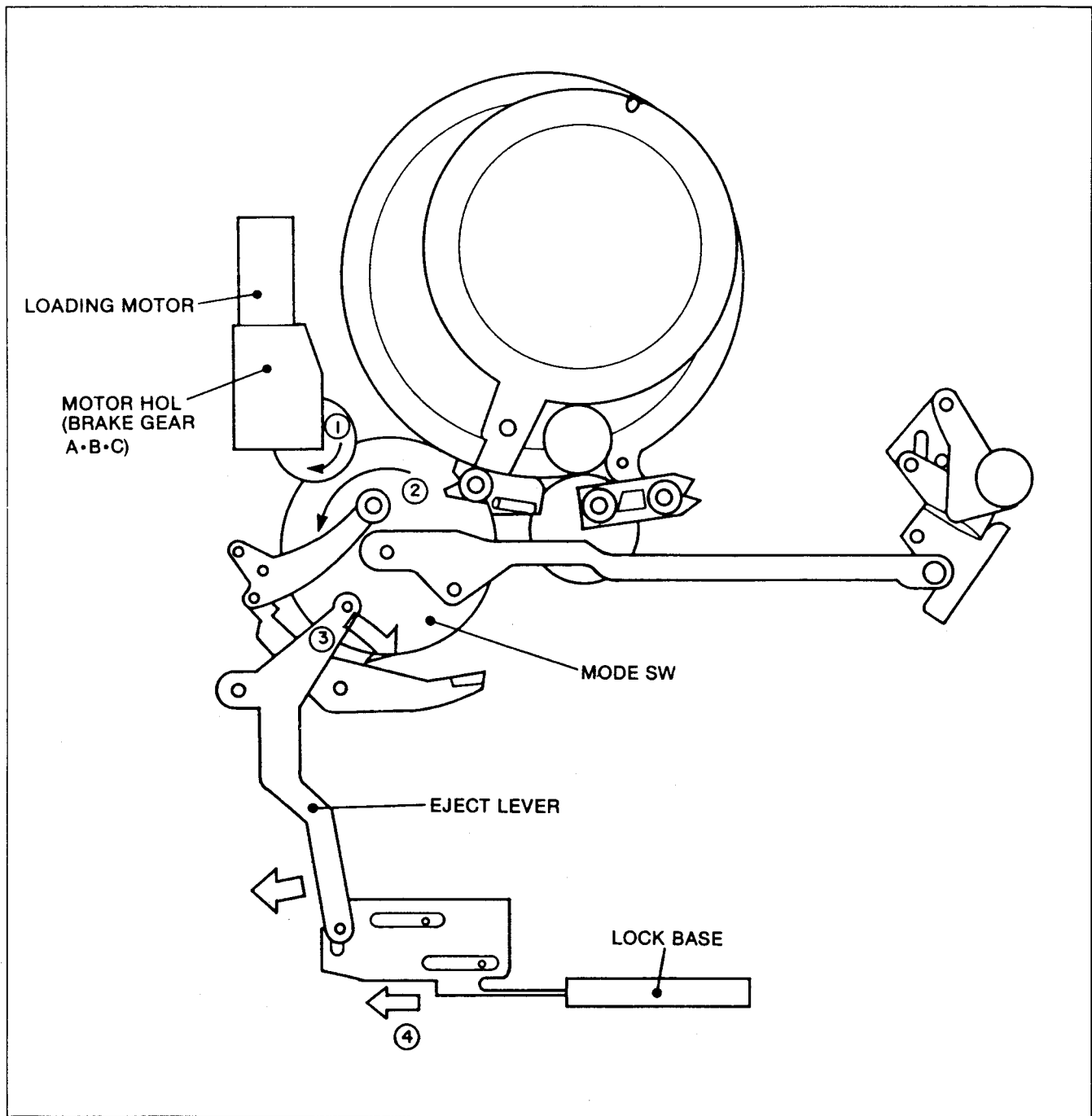


Fig. 2 Loading mechanism

Motive power of loading motor is transferred in numerical order.

After cassette up operation, the gears are moved in the opposite direction of the arrows, to turn back stop position.

3. Movement of Reel table

1. FF operation

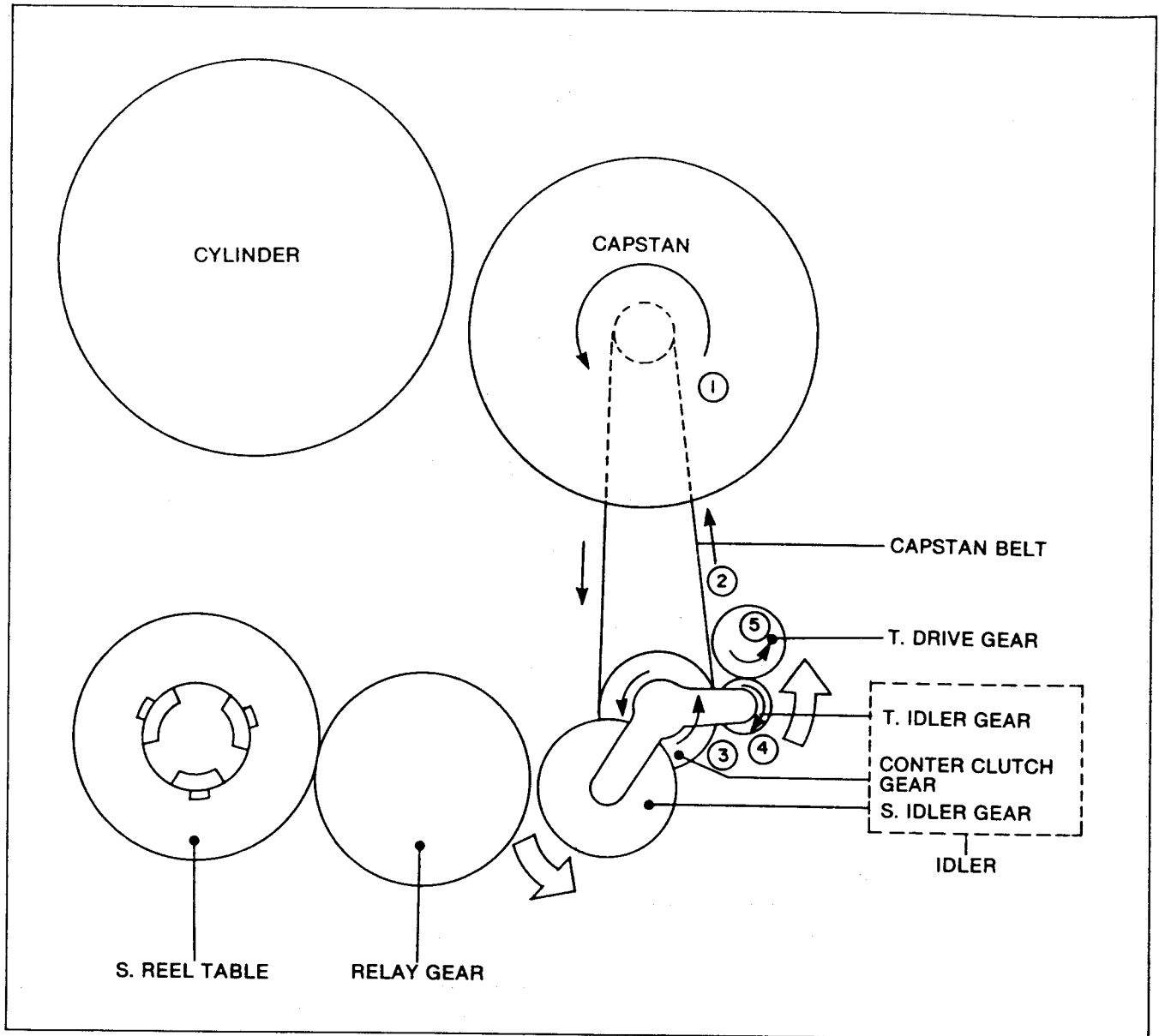


Fig. 3 Take-Up side of Reel Drive

Motive Power of Capstan motor is transferred to idler (Center clutch Gear) through the capstan belt.

At this time, Position of idler is decided by rotation of capstan motor.

After that, Motive power is transferred in numerical order.

Finally, Take-up Reel is rotated by T.Drive Gear.

Pad Arm is moved by Ten. Reg. Arm, and then (the Ten.Reg.Arm is moved into contact) with lower side of S.Reel table in order to apply back tension to tape.

2. REW operation

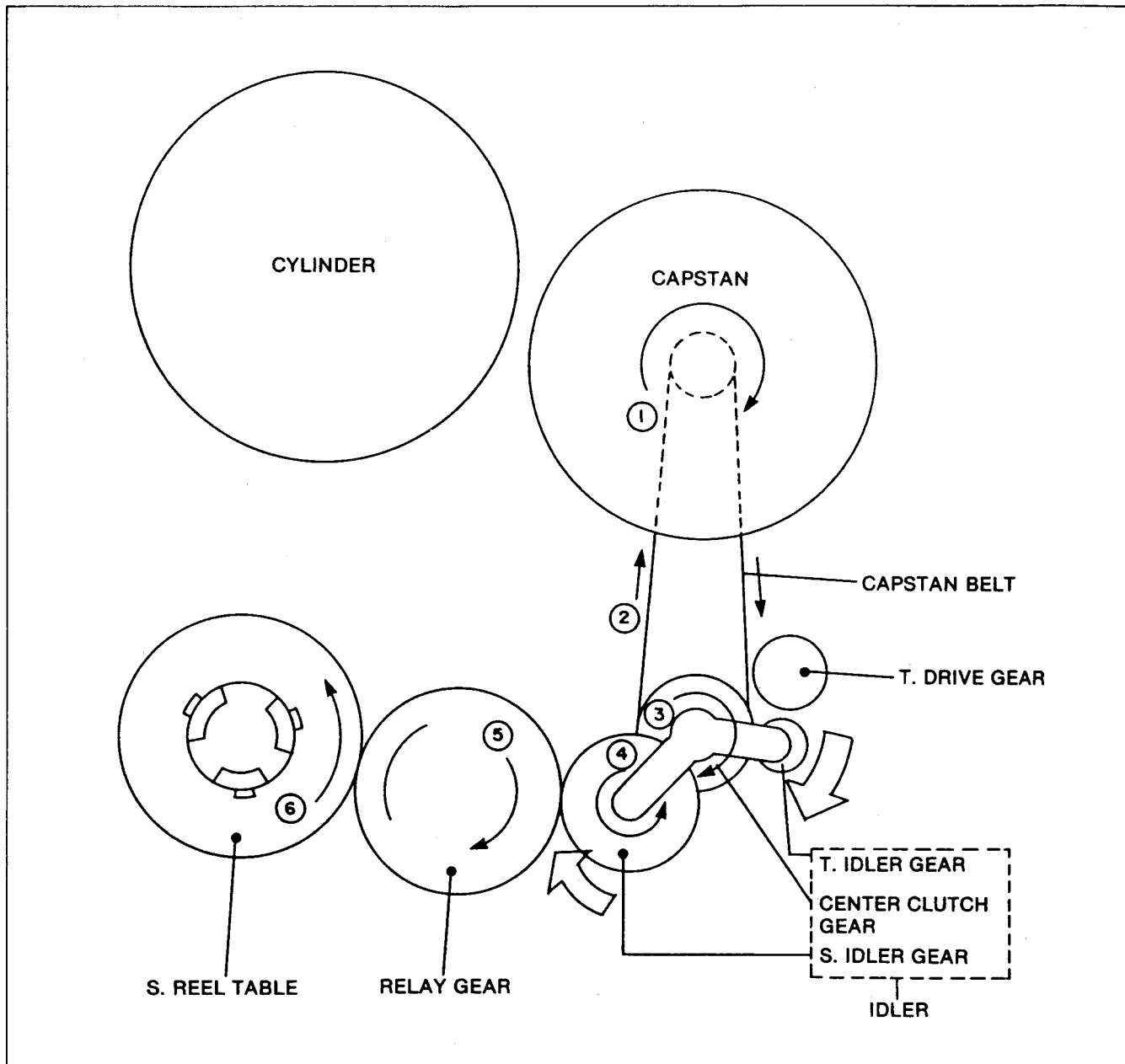


Fig. 4 Supply side of Reel drive

Motive power is transmitted in numerical order.
 At this time, idler is in contact with the Relay
 Gear by capstan rotation.
 Back tension is generated by contact Drive Gear T
 with REW Torque spring(Including the idler unit).

2 Alignment of Mechanism

Following mechanical phase Position is important for mechanical alignment.

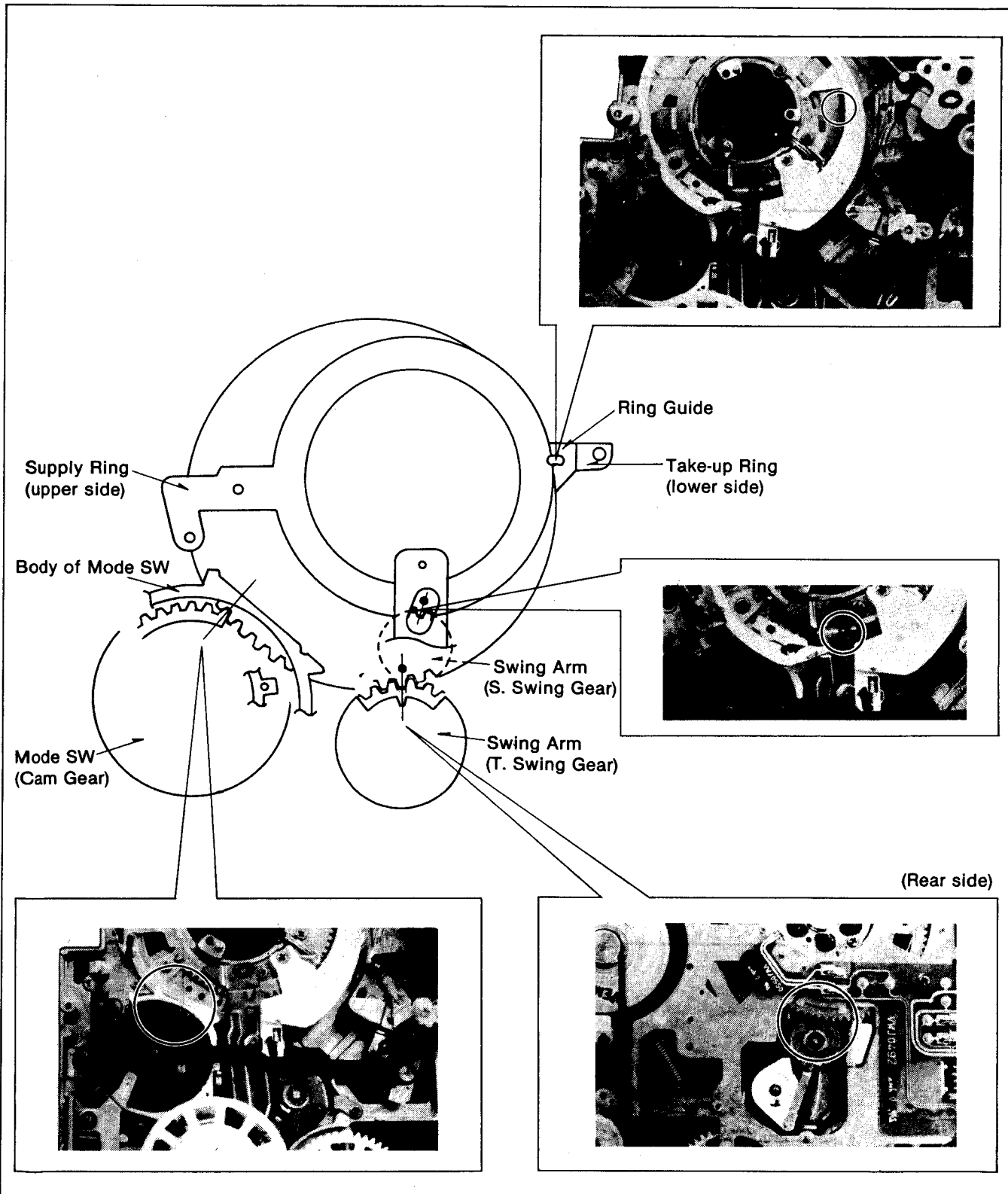
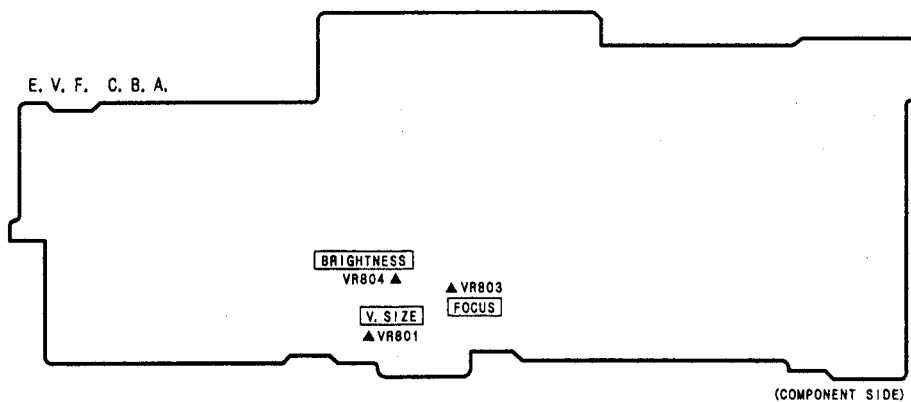


Fig. 5 Mechanism Phase

LOCATION OF TEST POINTS & CONTROLS



2-6. ELECTRICAL ADJUSTMENT PROCEDURES

2-6-1. ELECTRICAL ADJUSTMENT FOR VTR SECTION

TEST EQUIPMENT AND TOOLS

The following equipments are required for adjustment of the VTR section of VHS-Movie.

1. DVM (Digital Volt Meter)
Voltage Range : 0.01-50V
2. Dual Trace Oscilloscope.
Voltage Range : 0.06-50V/div
Frequency Range: 0-50MHz
Probe : 10:1 or 1:1
Frequency Range: 0-10MHz
3. Video Sweep Generator
Frequency Range: 0-10MHz
4. Colour Monitor TV
5. Plastic Tip Driver
6. VHS-C Movie Alignment Tape (VFM8180HUPF)
7. VHS-C Blank Tape

PREPARATION

1. Remove the casing panels.
(Please refer to disassembly method)
2. Connect the extension cables is necessary.

VFK0727	(Main C. B. A FP6001~MECH-CHASSIS)
VFK0728	(Main C. B. A FP4001~AC HEAD)
VFK0729	(Main C. B. A FP6002~MECH-CHASSIS)
VFK0929	(Main C. B. A B2011 ~CCD)
VFK0839	(Main C. B. A B1001 ~E. V. F C. B. A B1601)
VFK0896	(Main C. B. A FP6005~DRIVE C. B. A FP2003)
VFK0913	(Main C. B. A FP701 ~LENS UNIT)

NOTE: Please remove the S/S POWER SW, AV-JACK and Zoom SW from side case (L) unit.

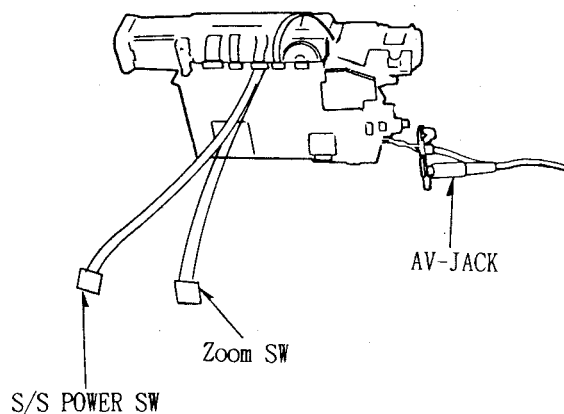
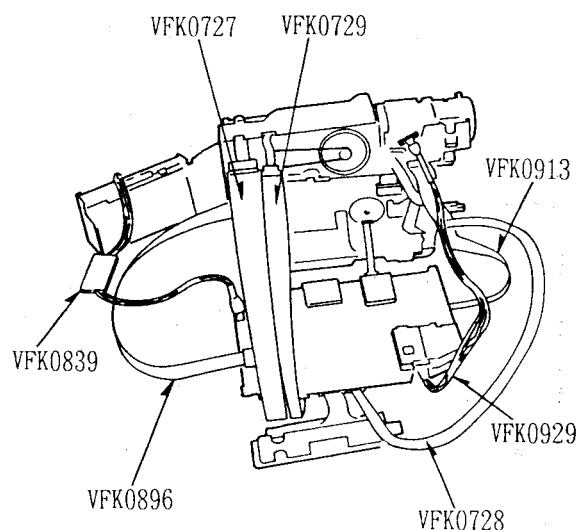
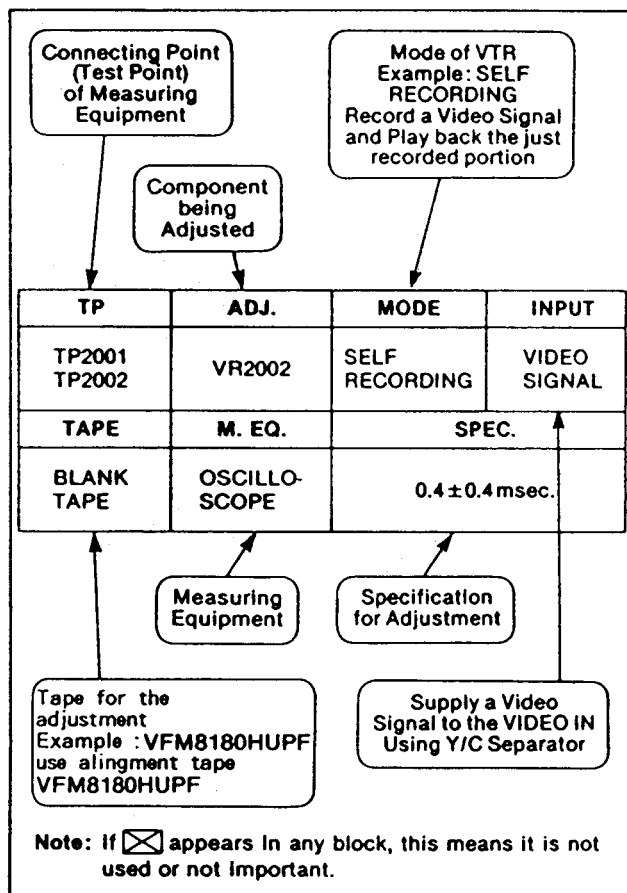


Fig. V1

HOW TO READ THE ADJUSTMENT PROCEDURES



Note: Triggering the Oscilloscope

To trigger the Oscilloscope, the following test point is used.

H. Rate : Video Output

V. Rate : B6004-6 (Head switching Signal)

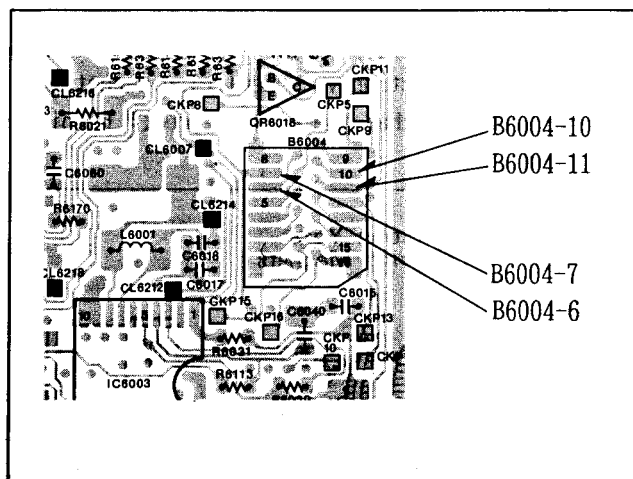


Fig. V2

1. LUMINANCE & CHROMINANCE SECTION

(1). YNR ADJUSTMENT

Purpose:

Improve the overall S/N Ratio especially in the Low Frequency Component.

Symptom of Misadjustment:

The S/N ratio is low.

T P	ADJ.	MODE	INPUT
TL3004	VR3001	PLAYBACK	
TAPE	M. EQ	SPEC	
ALIGNMENT TAPE VFM8180HUPF	OSCILLOSCOPE	SIGNAL IS MINIMIZED (LESS THAN 50mV)	

1. Playback the alignment tape.
2. Connect the oscilloscope to TL3004.
3. Adjust VR3001 so that signal is minimized.

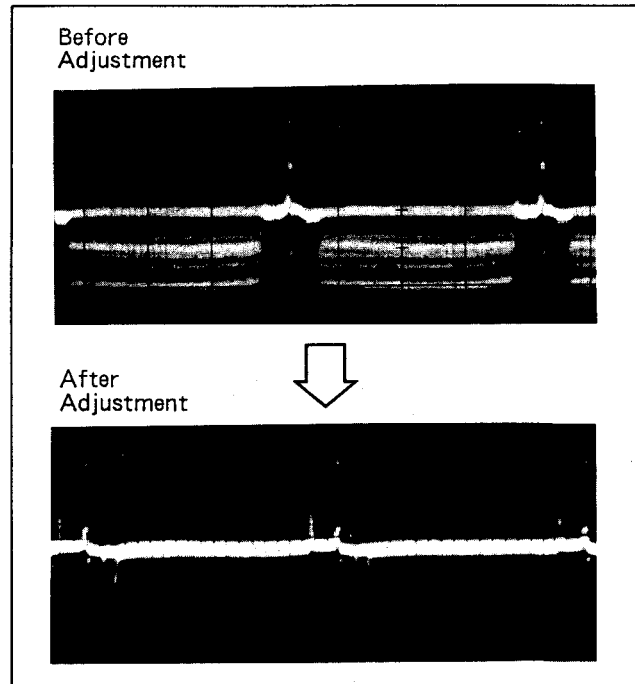


Fig. V3

(2). HEAD AMP FREQUENCY RESPONSE ADJUSTMENT

Purpose:

To improve Video Frequency Response Level.

Symptom of Misadjustment:

Video Frequency Response deteriorates.

Picuture becomes noisy.

T P	ADJ.	MODE	INPUT
VIDEO OUT	VR3003	REC & PLAYBACK	VIDEO SWEEP SIGNAL
TAPE	M. EQ	SPEC	
VHS-C	OSCILLOSCOPE	2MHz/0.1MHz = 1/1	
BLANK TAPE	VIDEO SWEEP	(0±1dB (100%))	

NOTE:

Connect the jumper wire between B6004-7 and B6004-11

After that video signal can be input through

B6004-10.

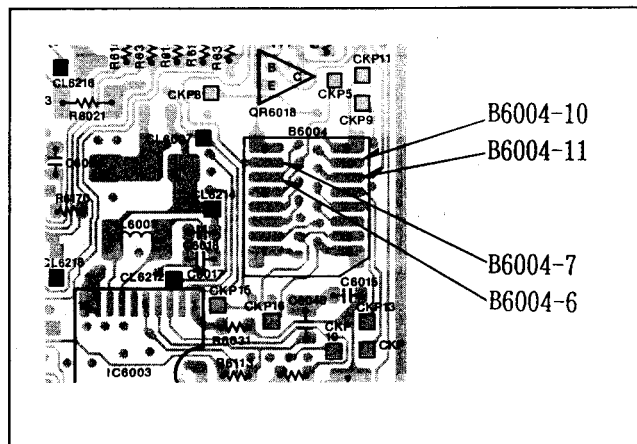


Fig. V4

1. Set the sweep generator output as shown below.

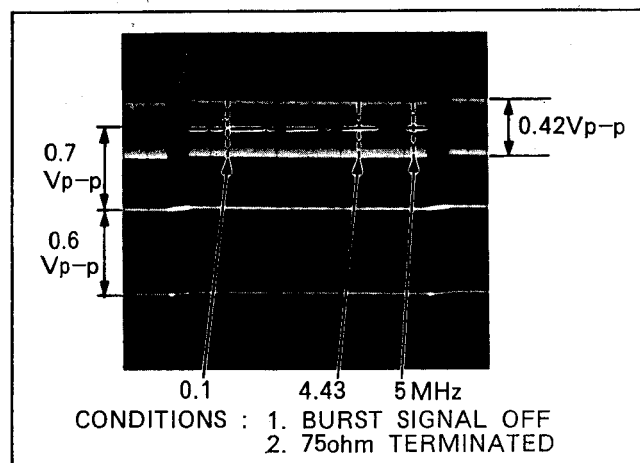


Fig. V5

2. Supply sweep signal to B6004-10.

3. Record the signal for few minutes.

4. Playback the recorded signal.

5. Adjust VR3003 so that level at the 2 MHz is within spec as shown below.

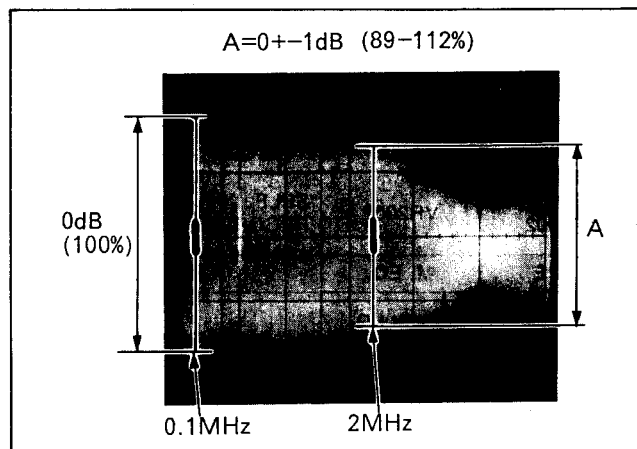


Fig. V6

2-6-2. ELECTRICAL ADJUSTMENT FOR E.V.F. SECTION

The follwing adjustment are for Electric Viewfinder.

Note:

(A). Connect the Viewfinder to unit.

(B). The camera unit circuit must be completely aligned before viewfinder adjustment are made.

(1). CENTREING ADJUSTMENT

1. Aim the camera at the registration chart.

2. Adjust the deflection yoke centreing magnets turning them so that the picture on E.V.F unit is centred.

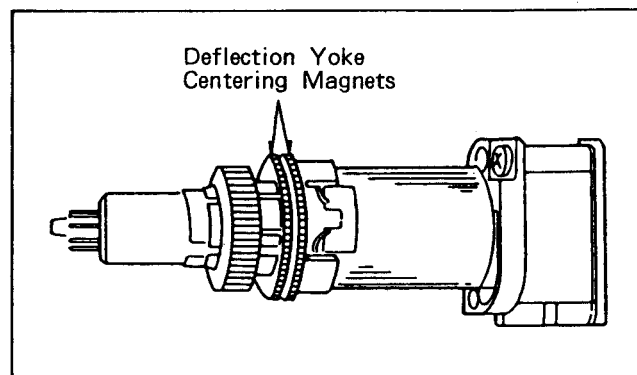
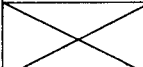


Fig. E1

(2). FOCUS ADJUSTMENT

T P	A D J.	LENS CAP	CHART
	VR803	REC	BALL CHART
M. E Q		S P E C	
VIEWFINDER		BEST RESOLUTION	

NOTE: VR803 is located on E.V.F.C.B.A

- (1). Aim the camera at the Ball Chart.
- (2). Adjust the VR803 for best resolution in Viewfinder.

NOTE:

After performing this adjustment, confirm position of "A" part on the VR803.

"A" part must be outside of 100 degree.

When "A" part is inside of 100 degree, must be re-adjust it..

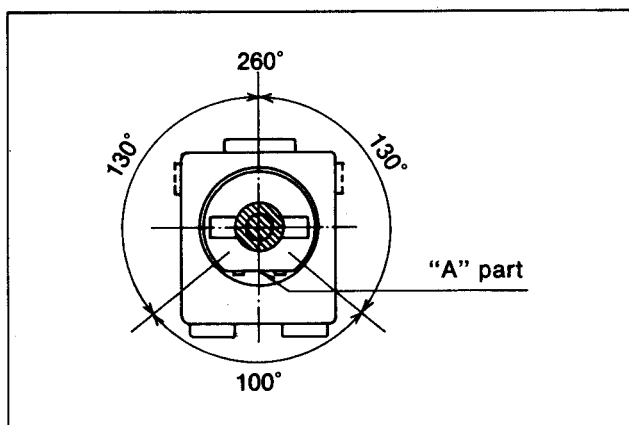
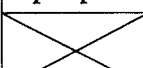


Fig E2

(3). VERTICAL SIZE ADJUSTMENT

T P	A D J.	LENS CAP	CHART
	VR801	NO	GRAY SCALE CHART
M. E Q		S P E C	
VIEWFINDER		VERTICAL SIZE IS FIXED	

NOTE: VR801 is located on E.V.F.C.B.A

- (1). Aim the camera at the Gray Scale Chart.
- (2). Adjust the VR801 for best vertical size.
(Picture does not roll as shown below.)

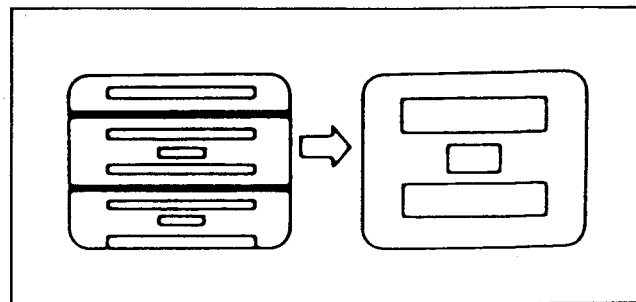
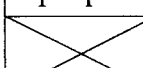


Fig.E3

(4). BRIGHTNESS ADJUSTMENT

T P	A D J.	LENS CAP	CHART
	VR804	NO	GRAY SCALE CHART
M. E Q		S P E C	
VIEWFINDER		NATURAL GRADATION	

NOTE: VR804 is located on E.V.F.C.B.A

- (1). Aim the camera at the Gray Scale Chart.
- (2). Adjust the VR804 so that the brightness in the viewfinder is the same as monitor TV screen.

NOTE: Following Adjustments required EVR fixture.
So, adjustment procedure described on Service manual 4822 726 15103

- 1: Croma Recording Current Adjustment
- 2: Luminance Recording Current Adjustment
- 3: PG shifter Adjustment

Memo

SECTION 3

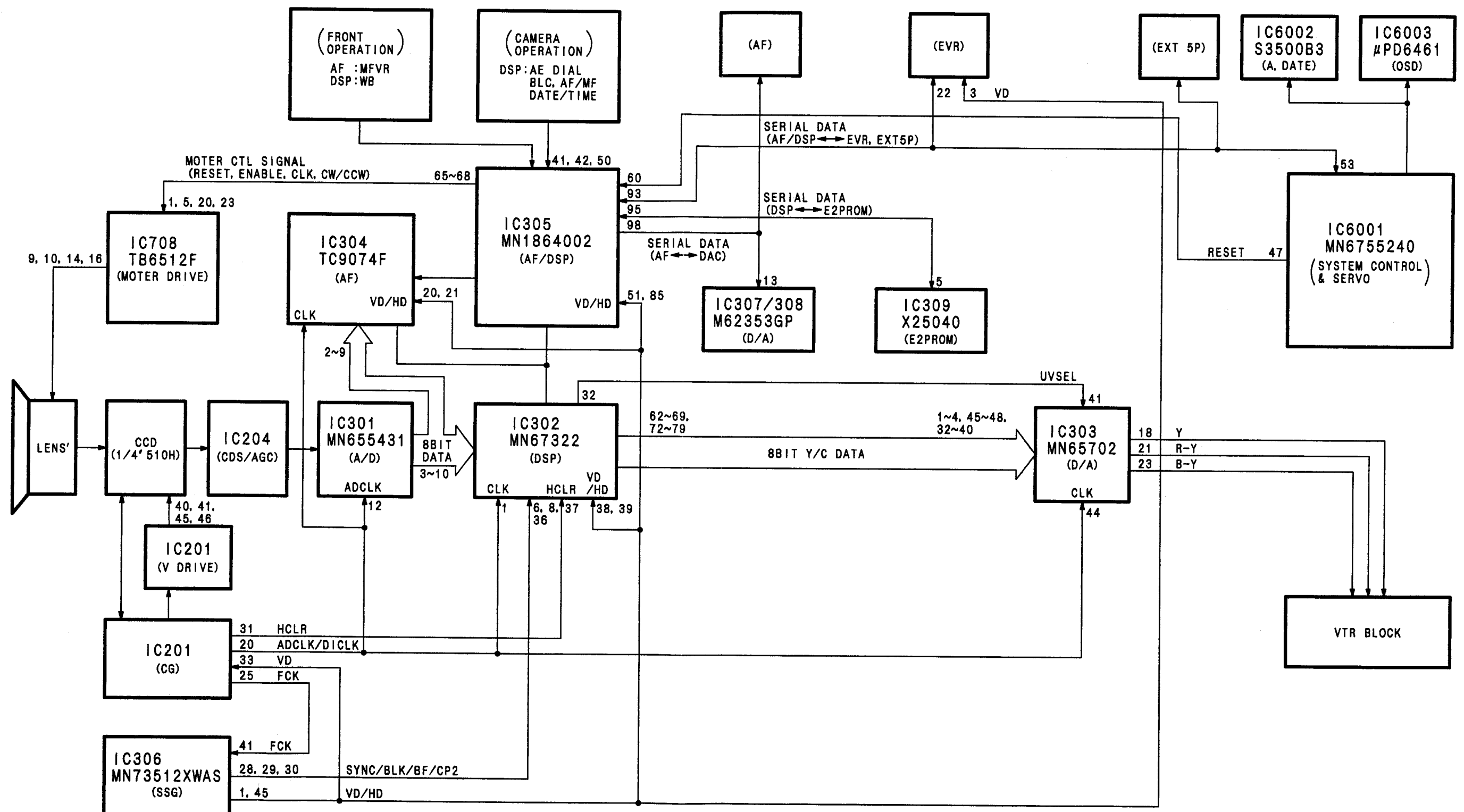
BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS

3-1. ABBREVIATIONS

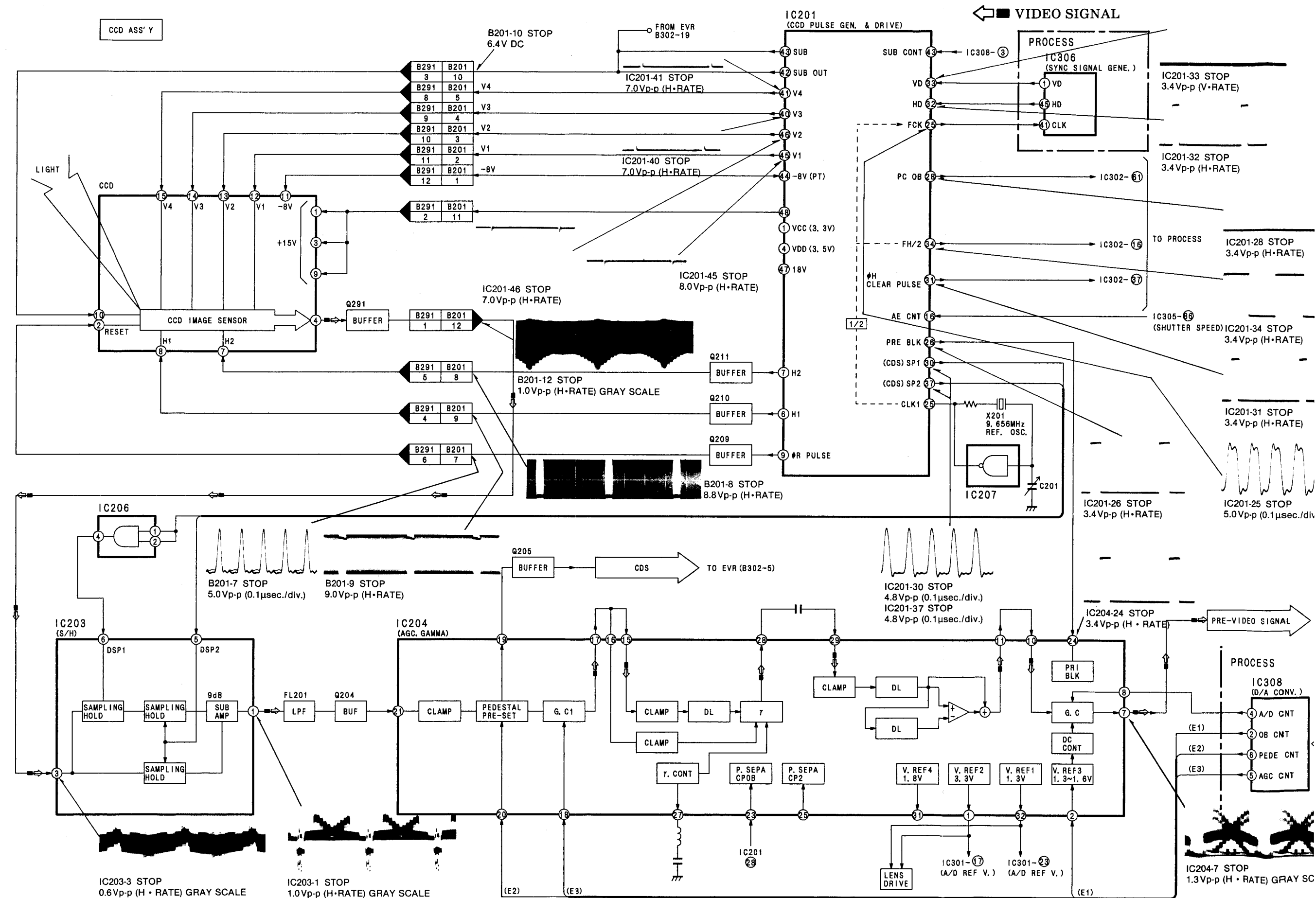
INITIAL/LOGO	ABBREVIATION	INITIAL/LOGO	ABBREVIATION
	3R3V 3.3V		DL DELAY LINE
A	A. TR AUTO TRACKING		DRK DARK
	ABSF FOCUS ENCODER INPUT		DS 1~2 DOUBLE SAMPLING PULSE
	ADCLK A/D CLOCK		DSP DIGITAL SIGNAL PROCESS
	ADCNT A/D CONTROL		DZ DIGITAL ZOOM
	ADREC AUDIO DELAIED REC		DZ/OZ DIGITAL ZOOM/OPTICAL ZOOM
	ADUB AUDIO DUBBING	E	ECM ELECTRIC CONDENCER MIC
	AE AUTO EXPOSURE		ENV DET ENVELOPE LEVEL DETECT
	AECNT AUTO EXPOSURE CONTROL		EZOOM ELECTRIC ZOOM
	AEIRQ AUTO EXPOSURE INTERRUPT REQUEST	F	FAR FAR (FOCUS)
	AFADE AUDIO FADE		FCK CLOCK (SENSOR:12.875MHz)
	AGCNT AUTO GAIN CONTROL		FENC FOCUS ENCODER
	ALCNT ALC CONTROL		FH2B FH/2 (15.625/2=7.8125kHz)
	ALCMAIN ALC DRIVE		FM MUTE FM AUDIO MUTE
	AMUT AUDIO MUTE		FMO~7 FIELD MEMORY INPUT 8BIT
	AORP AUDIO OVER LAP PULSE		FMD REC FM AUDIO RELAYED REC
	APS AUTO POWER SAVER		FMOEM FIELD MEMORY ENABLE
	ARTV ARTIFICIAL VERTICAL SYNC		FNO F VALUE
	AWTB AUTO WHITE TRACKING B-Y SIDE	G	GCNT GAIN CONTROL
	AWTR AUTO WHITE TRACKING R-Y SIDE	H	H1 ~ 2 H. CCD DRIVE PULSE
B	B-Y KB B-Y CARRIER BALANCE		HBRSET HIGH BRIGHT SET
	BACK BACK UP		HCLR HIGH CLEAR
	BEND BLOCK AVERAGE DATA INTERRUPT		HD HORIZONTAL DRIVE PULSE
	BF BURST PLUG PULSE		HEX HEXADECEMAL
	BFA BURST PLUG FOR ENCODER		HLT HIGHT BRIGHT SIGNAL
	BL BACK LIGHT	I	INTER INTERVAL RECORDING
	BLDIN BACK LIGHT DRIVE PULSE INPUT		IOU R-Y ANALOGUE SIGNAL OUTPUT
	BLDOUT BACK LIGHT DRIVE PULSE OUTPUT		IOV B-Y ANALOGUE SIGNAL OUTPUT
	BLK BLANKING PULSE		IRQ INTERRUPT REQUEST
	BM BALANCED MODULATOR		IRQ INTERRUPT REQUEST
	BUF BUFFER	K	KANDO DIGITAL GAIN-UP
C	CAPVM CAPSTAN MOTOR CURRENT	L	LD LOAD PULSE
	CCW COUNTER CLOCK WISE		LEDCNT LED CONTROL
	CDS CCD (SENSOR CIRCUIT) OUTPUT		LI BATT LITHIUM BATTERY
	CFM 1~4 CHROMINANCE FIELD MEMORY		LSB LEAST SIGNIFICANT BIT
	CGC CHROMINANCE GAIN CONTROL	M	MD MODULATOR
	CH1 Channel 1 (Odd field)		MFF MANUAL FOCUS FAR
	CHR MIX CHARACTER MIX		MFN MANUAL FOCUS NEAR
	CK or CLK CLOCK		MSB MOST SIGNIFICANT BIT
	CLK2 CLOCK 2 (824XFH=12.875MHz)	N	N/F NEAR/FAR (FOCUS)
	CMEM CHROMINANCE MEMORY SIGNAL		N/P NTSC/PAL
	CMO CHROMA MEMORY OUTPUT		NC NO CONNECTION
	COO~7 CHROMA OUTPUT (DIGITAL:8BIT)		NC1~3 NPN TRANSISTOR C-SIDE
	CP CLAMP PULSE		NDE NON LINER DE-EMPHASIS
	CPOB OB CLAMP PULSE		NEAR NEAR (FOCUS)
	CS CHIP SELECT		NLE NON LINER EMPHASIS
	CSEL1~2 CLOCK PHASE SELECT		NRD NON REC DATA
	CW CLOCK WISE		NRDLK NON REC DATA BLANKING
	CYLMV CYLINDER MOTOR CURRENT		NRE READ ENABLE INPUT(LOW ACTIVE)
D	D MODE0~2 DIGITAL MODE SWITCH SIGNAL		NWE WRITE ENABLE INPUT(LOW ACTIVE)
	DO ~ D8 VIDEO OUT (DIGITAL 9BIT)	O	OBCNT OPTICAL BLACK CONTROL
	DCLR DIGITAL CLEAR		OE OUTPUT ENABLE
	DICLK DIGITAL CLOCK		OP OPERATIONAL AMP OUTPUT
	DISCS DIS CHIPSELECT		OSD ON SCREEN DISPLAY

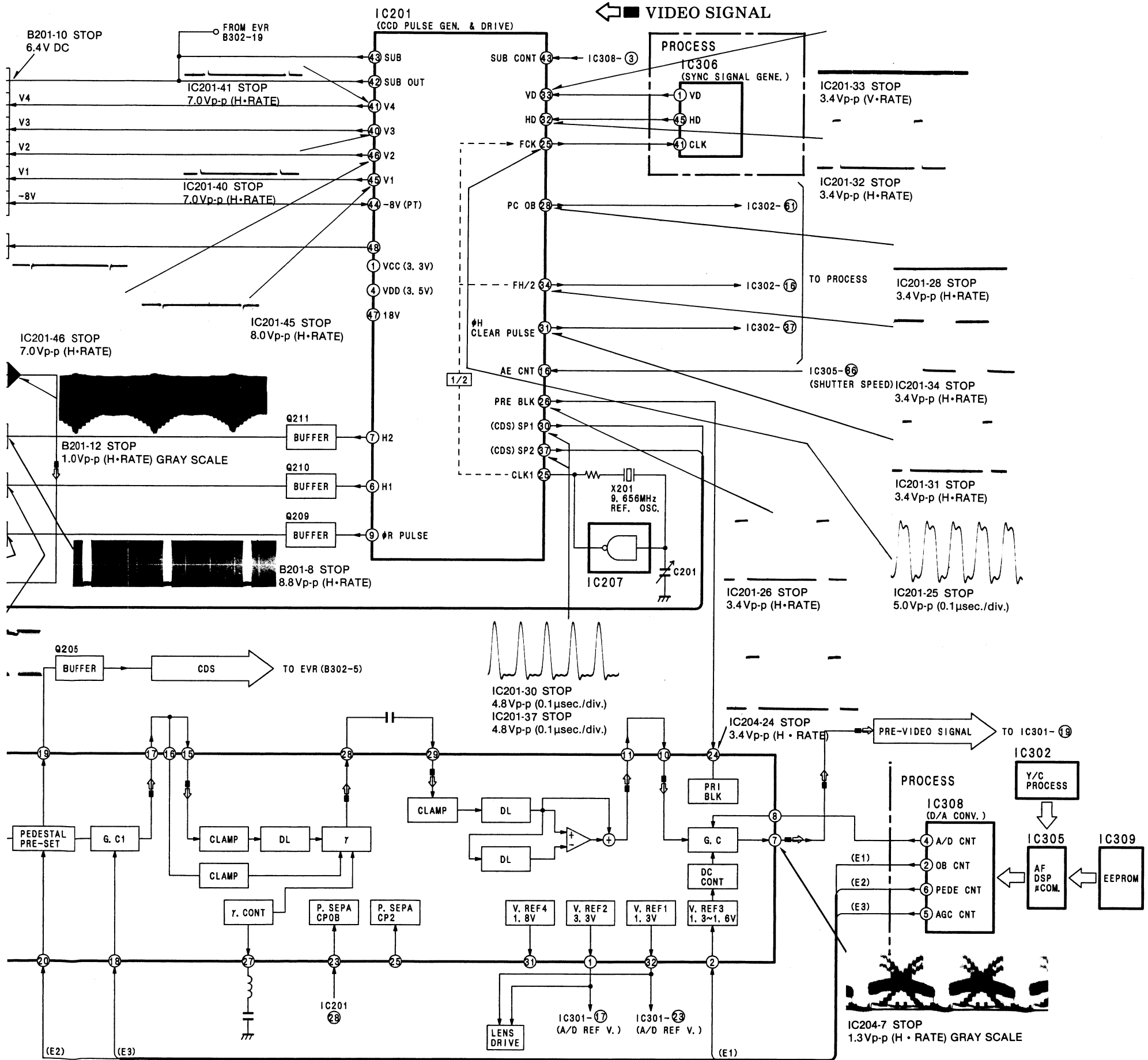
INITIAL/LOGO	ABBREVIATION	INITIAL/LOGO	ABBREVIATION
P	PB1~3 PNP TRANSISTOR B-SIDE	Y	Y 0~7 8BIT LUMINANCE DIGITAL SIGNAL
	PBLK PRE-BLANKING		YNC NOISE CANCELER (LUMINANCE)
	PCBM(B-Y) B-Y CARRIER BALANCE		YNR NOISE REDUCTION (LUMINANCE)
	PCBM(R-Y) R-Y CARRIER BALANCE	Z	Z ENC ZOOM ENCODER
	PEDECNT PEDESTAL CONTROL		Z-MIC ZOOM MIC
	POR POWER ON RESET		ZENC1~4 ZOOM ENCODER
	PREBLK PRE-BLANKING		ZMT ZOOM MOTOR TELE SIDE
	PT PROTECT FOR Φ V VOLTAGE (-8V)		ZMT(+)/(-) ZOOM MOTOR (+)/(-)
	PWM PULSE WIDTH MODULATOR		ZMW ZOOM MOTOR WIDE SIDE
R	R/B READY/BUSY	Φ	ϕ H1~2 H. CCD DRIVE PULSE
	R-Y KB R-Y CARRIER BALANCE		ϕ R RESET PULSE
	RAD READ ADDRESS DATA		ϕ V1~4 V. CCD DRIVE PULSE
	RAE READ ADDRESS ENABLE		
	RE READ ENABLE		
	RE ROTARY ERASE HEAD		
	RERASE ROTARY ERASE HEAD		
	RST RESET		
	RSTR RESET READ		
	RSTW RESET WRITE		
S	S/S START/STOP		
	SBO SERIAL OUTPUT		
	SBD SERIAL DATA		
	SCLK SERIAL CLOCK		
	SDET S-VHS DETECT		
	SH/IRIS SHUTTER/IRIS SW		
	STAB S-VHS TAB SWITCH		
	SUB CNT SUB CONTROL (SHUTTER SPEED)		
T	TL TORQUE LIMIT		
	TRFIX TRACKING FIX		
	TRP TRAP		
U	U/V SELCT R-Y/B-Y SELECT SIGNAL		
	UVSEL R-Y/B-Y SELECT SIGNAL		
V	V1~4 V. CCD DRIVE PULSE		
	VCO VOLTAGE CONTROL OSCILLTOR		
	VCTRL or VCTR Φ VOLTAGE CHARGE CONTROL		
	VD VERTICAL DRIVE PULSE		
	VDREC VIDEO DELAYED REC		
	VIN VIDEO IN (ANALOGUE)		
	VITC VERTICAL INTERVAL TIME CODE		
	VMD1~3 VELOCITY MODE DATA (SHUTTER)		
	VORP VIDEO OVERLAP		
	VRB VOLTAGE REFERENCE BOTTOM (1.3V)		
	VREF1R3V REFERENCE VOLTAGE 1.3v		
	VREF3R3V REFERENCE VOLTAGE 3.3v		
	VREFH REFERENCE VOLTAGE HIGH SIDE		
	VREFL REFERENCE VOLTAGE LOW SIDE		
	VRI REFERENCE VOLTAGE INPUT		
	VRO REFERENCE VOLTAGE OUTPUT		
	VRO REFERENCE VOLTAGE OUTPUT		
	VRT VOLTAGE REFERENCE TOP (3.3V)		
	VSS VERTICAL SYNC SIGNAL		
W	WAD or WAE WRITE ADDRESS ENABLE		
	WE WRITE ENABLE		
	WHD WIDE HORIZONTAL DRIVE PULSE		

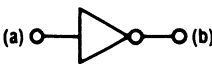
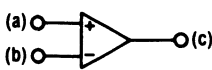
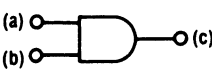
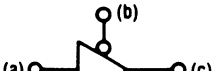
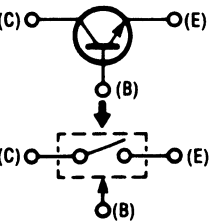
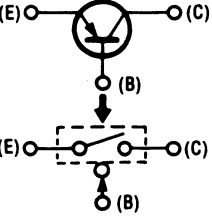
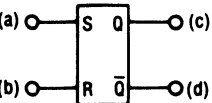
3-2. OVERALL BLOCK DIAGRAM



3-3. SENSOR BLOCK DIAGRAM



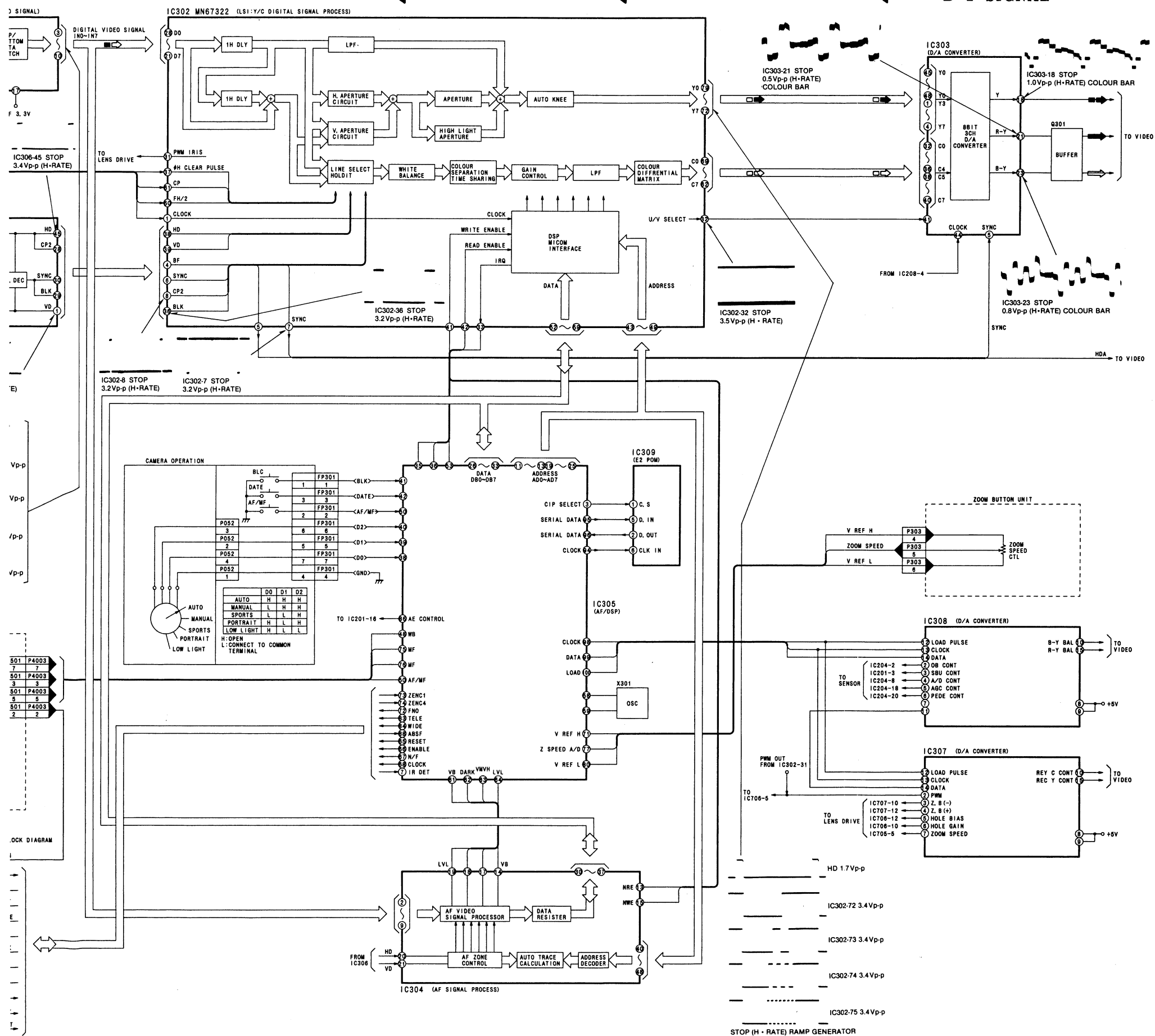


SYMBOL	TRUTH VALUE TABLE																				
INVERTER 	<table><tr><td>IN</td><td>(a)</td><td>H</td><td>L</td></tr><tr><td>OUT</td><td>(b)</td><td>L</td><td>H</td></tr></table>	IN	(a)	H	L	OUT	(b)	L	H												
IN	(a)	H	L																		
OUT	(b)	L	H																		
COMPARTOR 	<table><tr><td>IN</td><td>(a)</td><td>(a) > (b)</td><td>(a) < (b)</td></tr><tr><td></td><td>(b)</td><td></td><td></td></tr><tr><td>OUT</td><td>(c)</td><td>H</td><td>L</td></tr></table>	IN	(a)	(a) > (b)	(a) < (b)		(b)			OUT	(c)	H	L								
IN	(a)	(a) > (b)	(a) < (b)																		
	(b)																				
OUT	(c)	H	L																		
AND CIRCUIT 	<table><tr><td>IN</td><td>(a)</td><td>L</td><td>L</td><td>H</td><td>H</td></tr><tr><td></td><td>(b)</td><td></td><td></td><td></td><td></td></tr><tr><td>OUT</td><td>(c)</td><td>L</td><td>L</td><td>L</td><td>H</td></tr></table>	IN	(a)	L	L	H	H		(b)					OUT	(c)	L	L	L	H		
IN	(a)	L	L	H	H																
	(b)																				
OUT	(c)	L	L	L	H																
OR CIRCUIT 	<table><tr><td>IN</td><td>(a)</td><td>L</td><td>L</td><td>H</td><td>H</td></tr><tr><td></td><td>(b)</td><td></td><td></td><td></td><td></td></tr><tr><td>OUT</td><td>(c)</td><td>L</td><td>H</td><td>L</td><td>H</td></tr></table>	IN	(a)	L	L	H	H		(b)					OUT	(c)	L	H	L	H		
IN	(a)	L	L	H	H																
	(b)																				
OUT	(c)	L	H	L	H																
THREE STATES BUFFER 	<table><tr><td>IN</td><td>(a)</td><td>H</td><td>L</td><td>H or L</td></tr><tr><td></td><td>(b)</td><td></td><td></td><td></td></tr><tr><td>OUT</td><td>(c)</td><td>H</td><td>L</td><td>※</td></tr></table> ※ High Impedance	IN	(a)	H	L	H or L		(b)				OUT	(c)	H	L	※					
IN	(a)	H	L	H or L																	
	(b)																				
OUT	(c)	H	L	※																	
TR. SW (NPN TYPE) 	<table><tr><td>BASE</td><td>H</td><td>L</td></tr><tr><td>TR. SW</td><td>ON</td><td>OFF</td></tr></table>	BASE	H	L	TR. SW	ON	OFF														
BASE	H	L																			
TR. SW	ON	OFF																			
TR. SW (PNP TYPE) 	<table><tr><td>BASE</td><td>H</td><td>L</td></tr><tr><td>TR. SW</td><td>OFF</td><td>ON</td></tr></table>	BASE	H	L	TR. SW	OFF	ON														
BASE	H	L																			
TR. SW	OFF	ON																			
R-S TYPE FLIP-FLOP 	<table><tr><td>IN</td><td>(a)</td><td>L</td><td>L</td><td>⌈</td></tr><tr><td></td><td>(b)</td><td></td><td></td><td></td></tr><tr><td>OUT</td><td>(c)</td><td>※</td><td>L</td><td>H</td></tr><tr><td></td><td>(d)</td><td>◆</td><td>H</td><td>L</td></tr></table> ※ Initial condition is maintained. ◆ Initial condition is reversed.	IN	(a)	L	L	⌈		(b)				OUT	(c)	※	L	H		(d)	◆	H	L
IN	(a)	L	L	⌈																	
	(b)																				
OUT	(c)	※	L	H																	
	(d)	◆	H	L																	

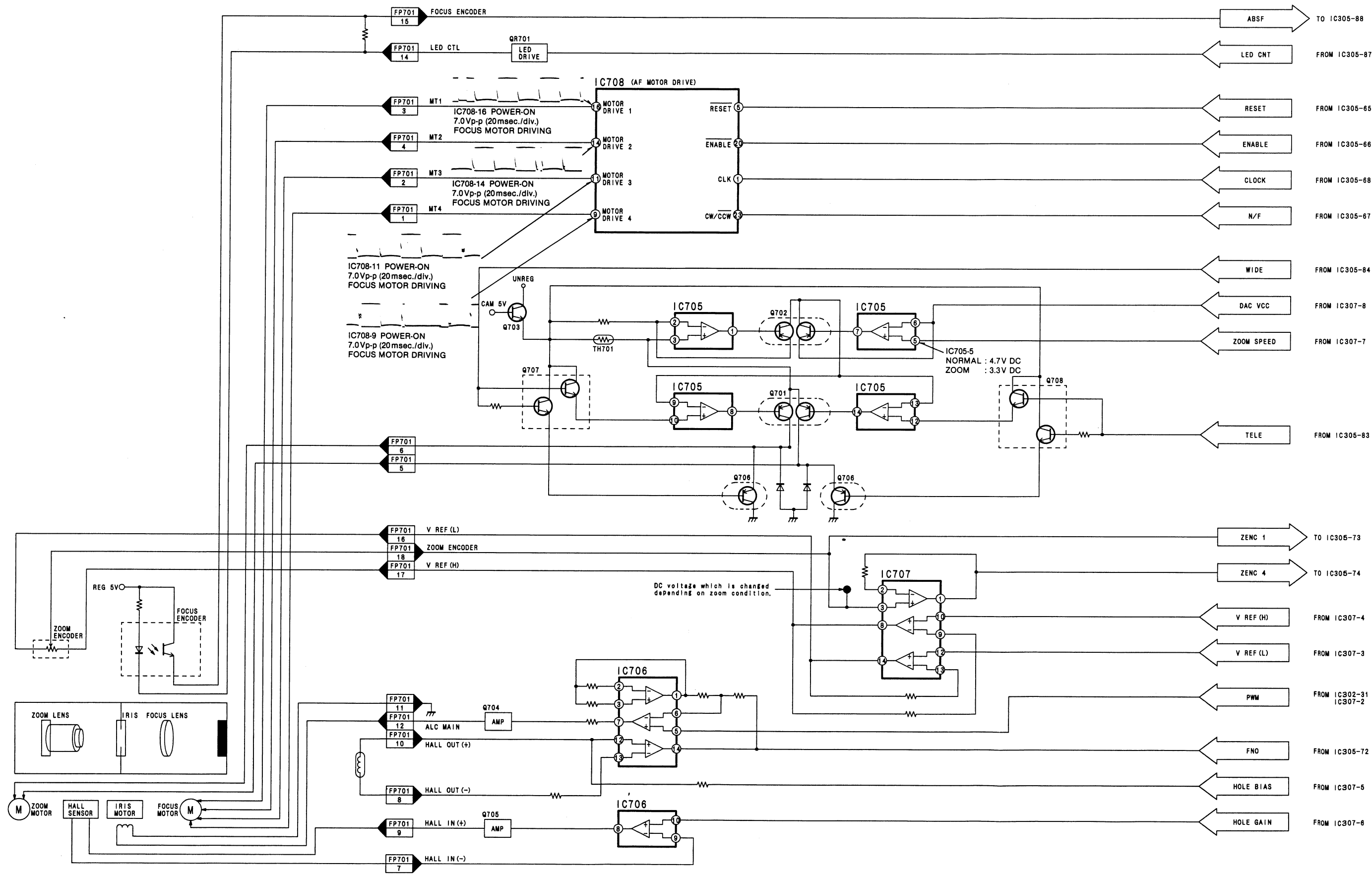
 VIDEO SIGNAL DIGITAL Y SIGNAL DIGITAL B-Y SIGNAL
 Y SIGNAL R-Y SIGNAL B-Y SIGNAL



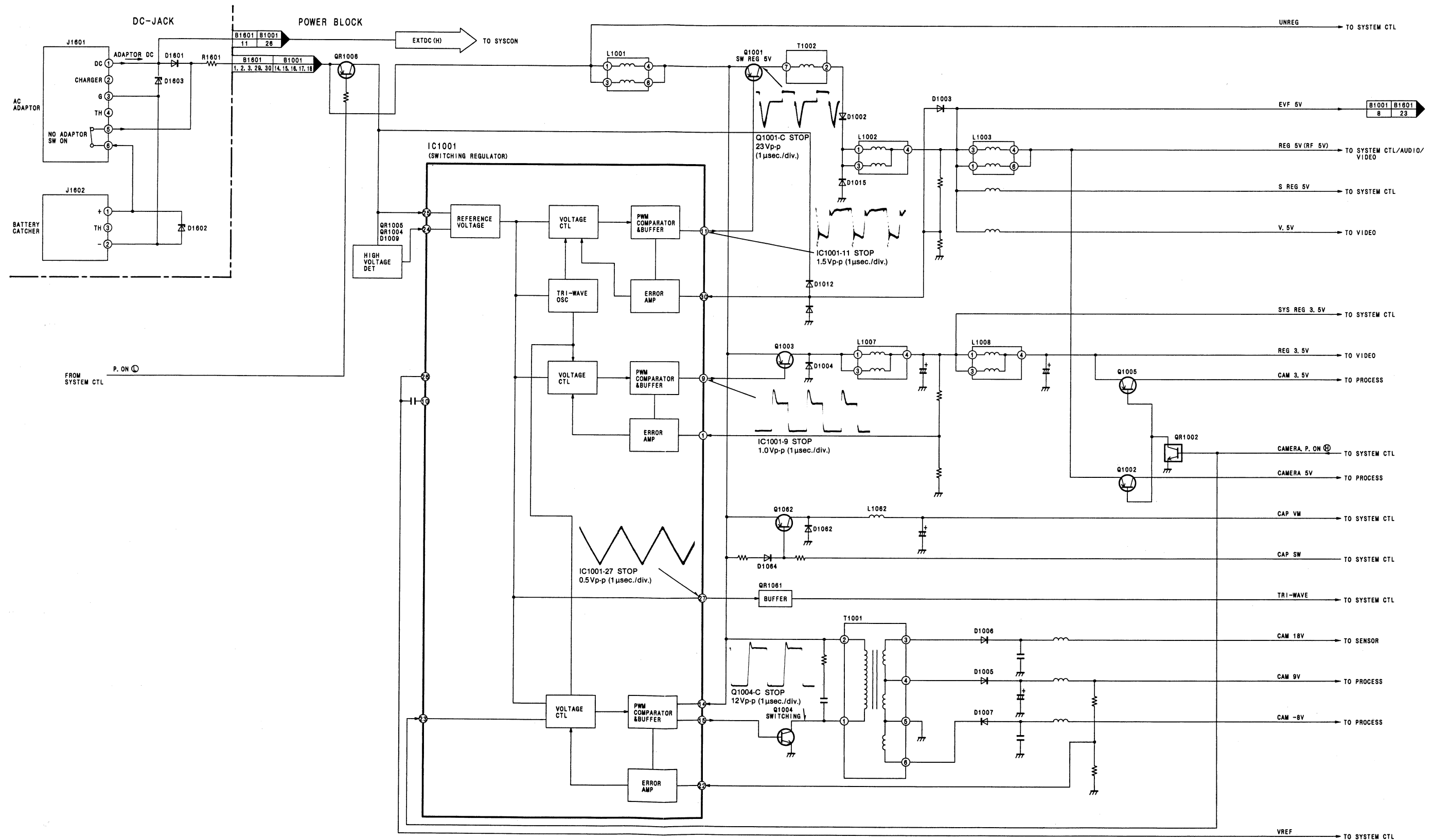
GRAM



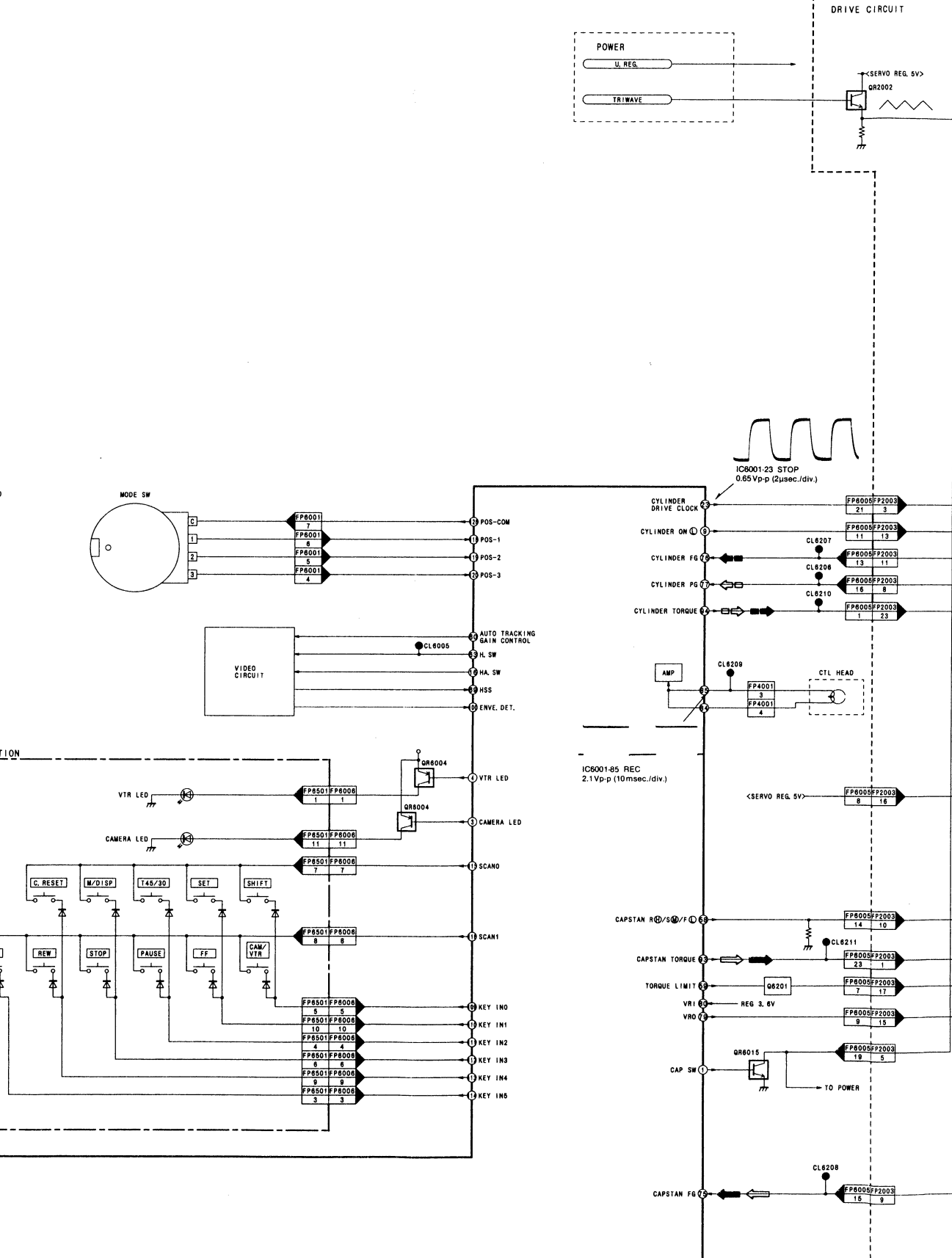
3-5. LENS DRIVE BLOCK DIAGRAM

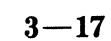


3-6. POWER BLOCK DIAGRAM

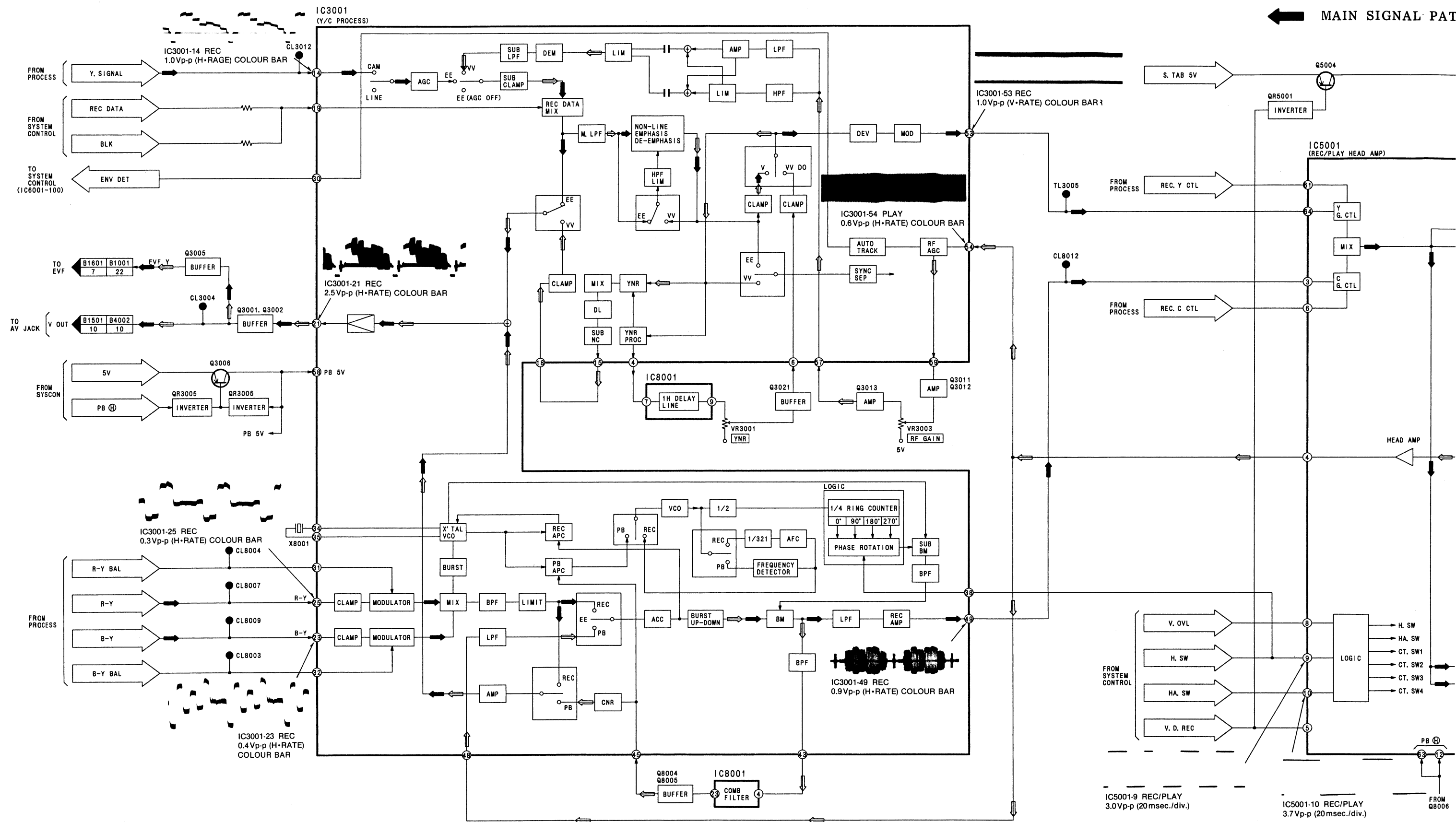


← CAPSTAN SERVO SPEED LOOP ← CAPSTAN SERVO PHASE LOOP ←



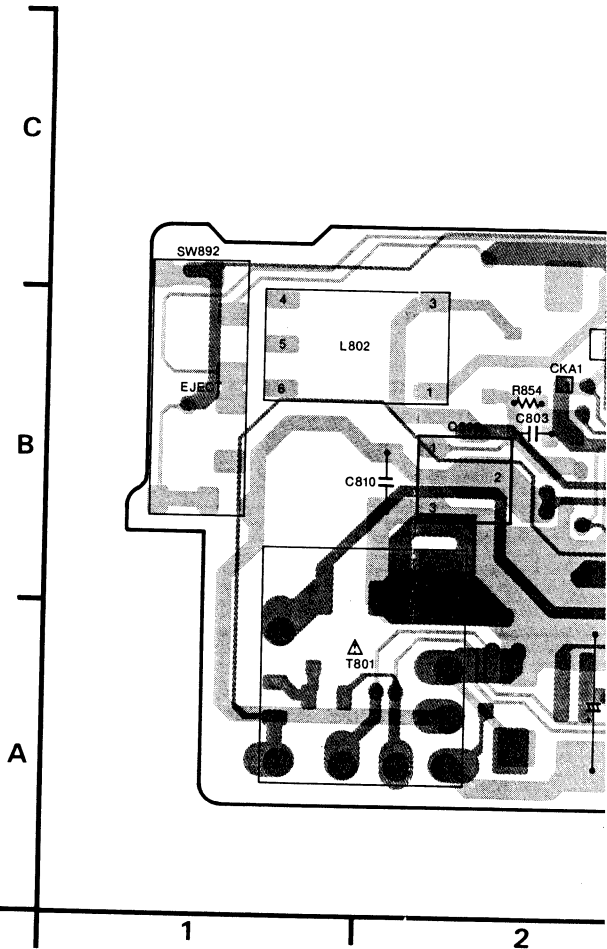
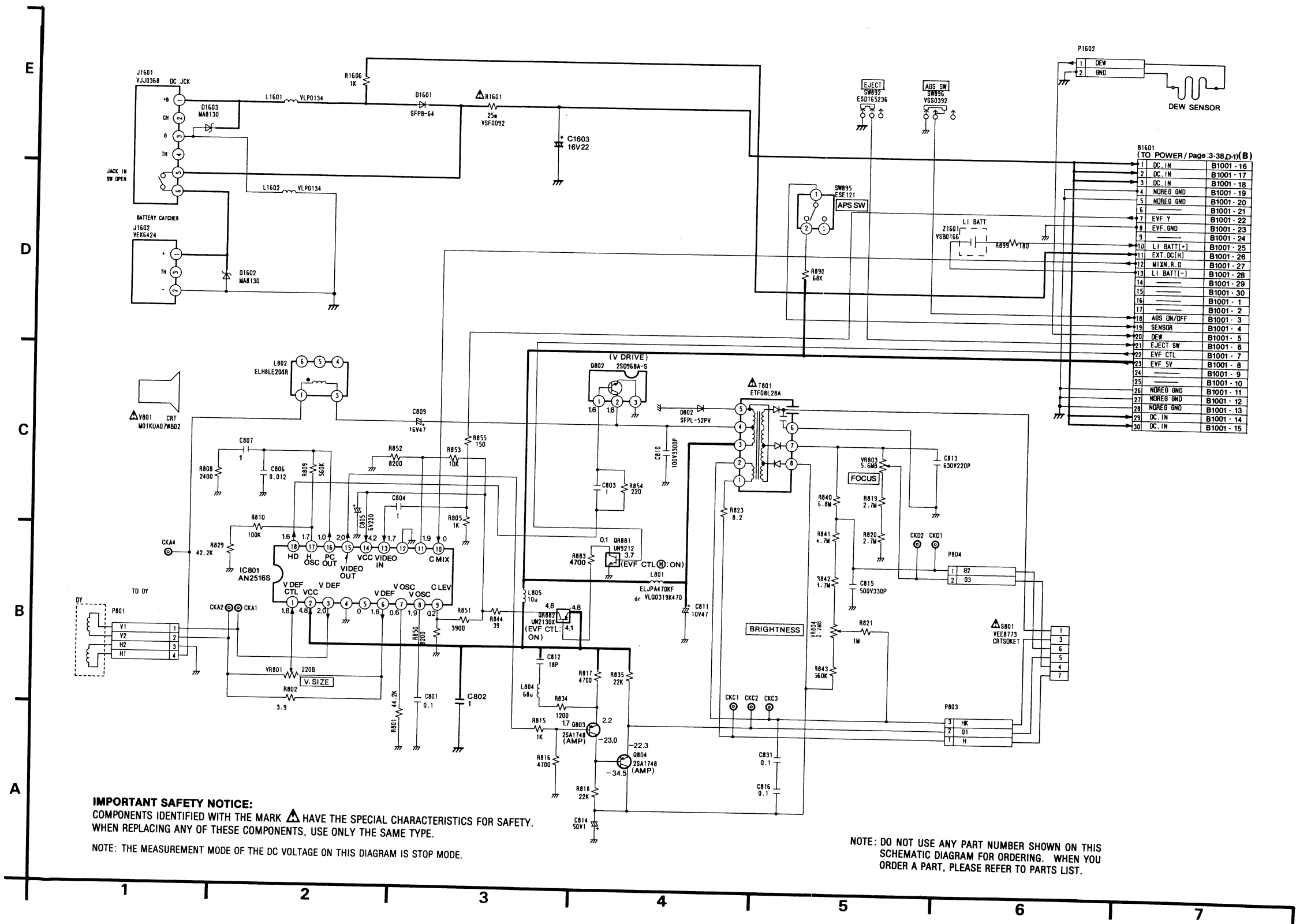


3-8. LUMINANCE/CHROMINANCE & HEAD AMP BLOCK DIAGRAM

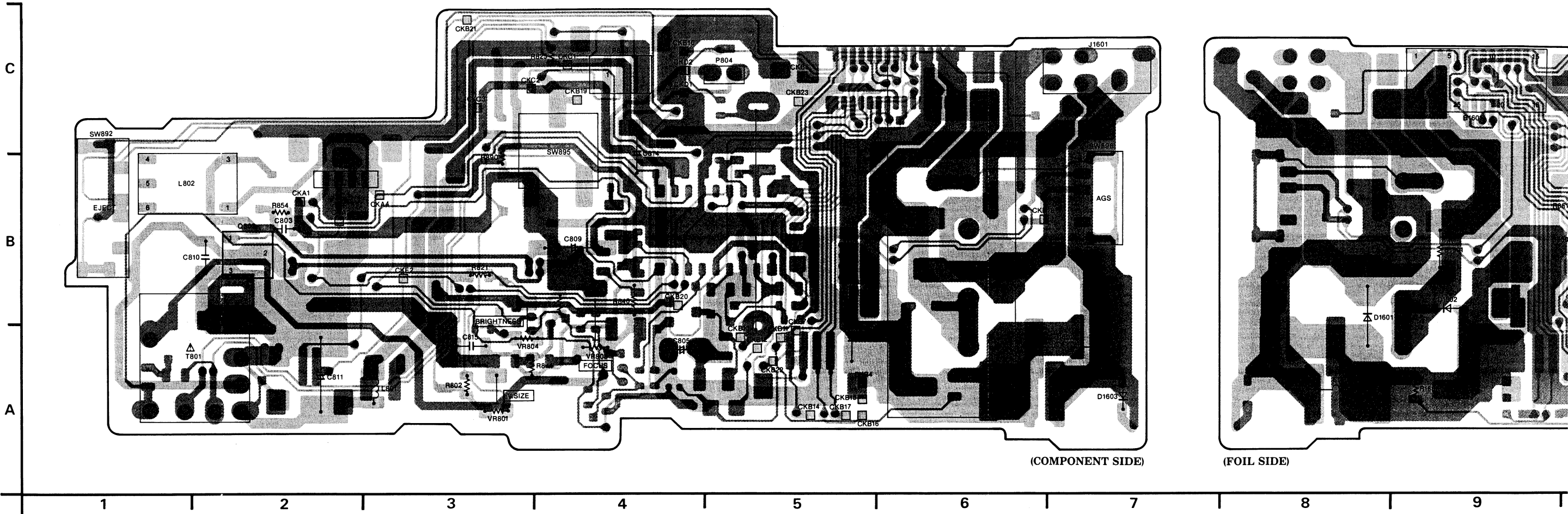


3-9. E.V.F. SCHEMATIC DIAGRAM

3-10. E.V.F. C.B.A. (VEP28076A)

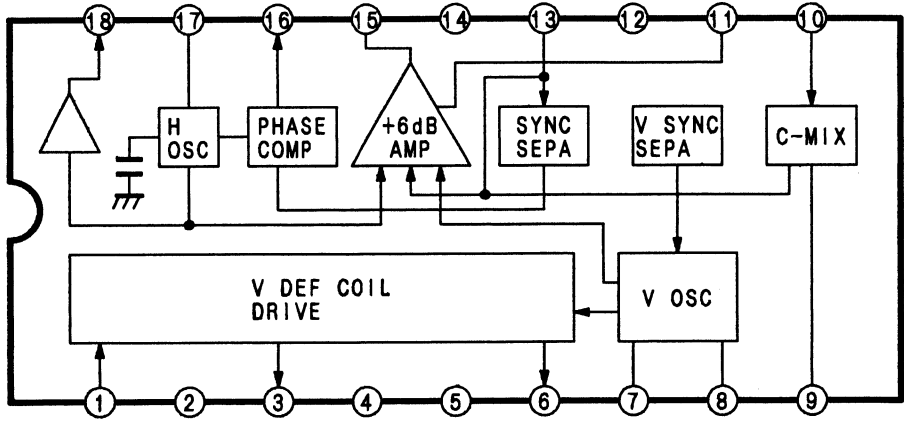


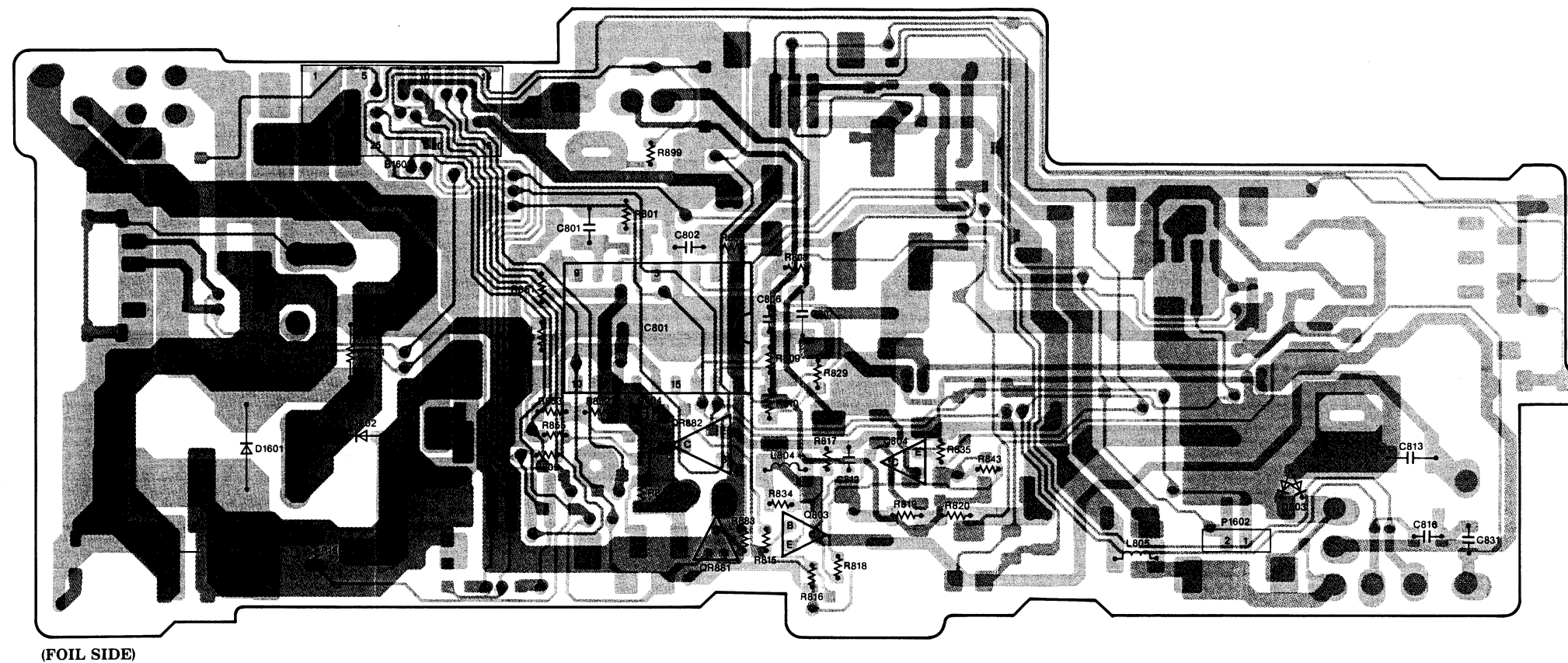
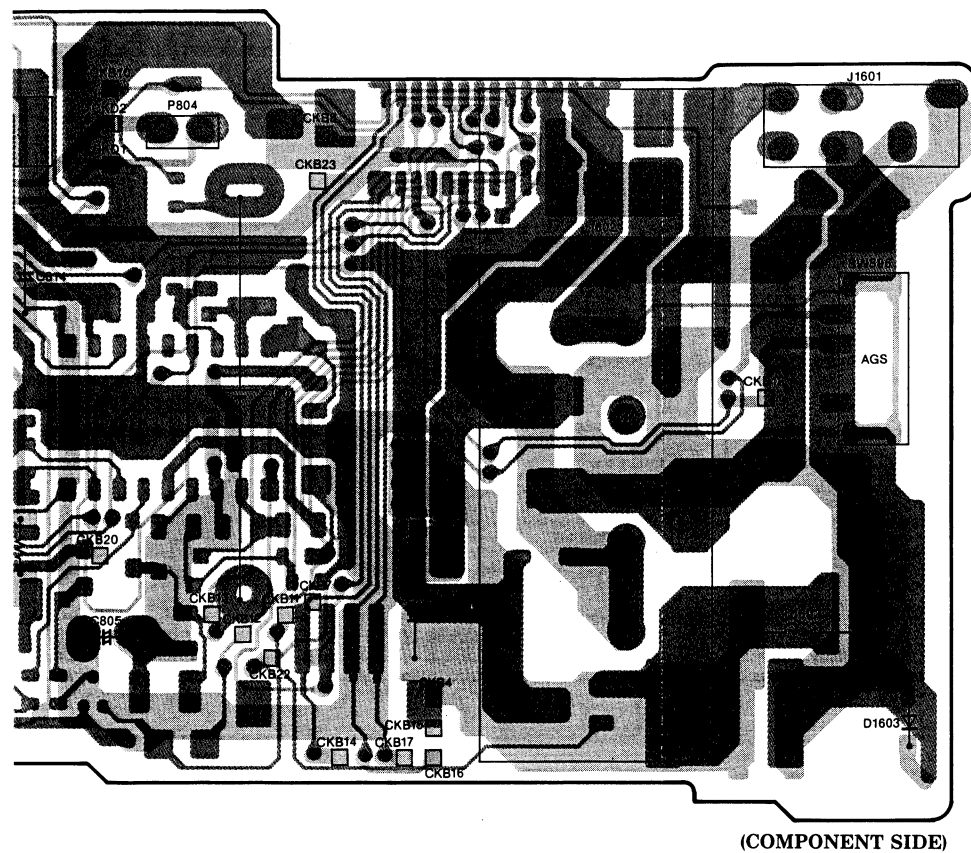
3-10. E.V.F. C.B.A. (VEP28076A)



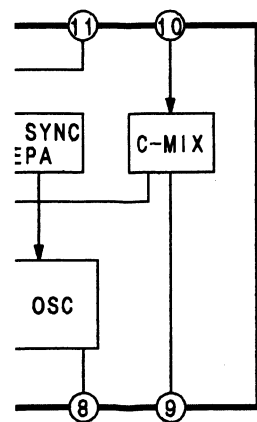
IC BLOCK

IC801 (AN2516S)





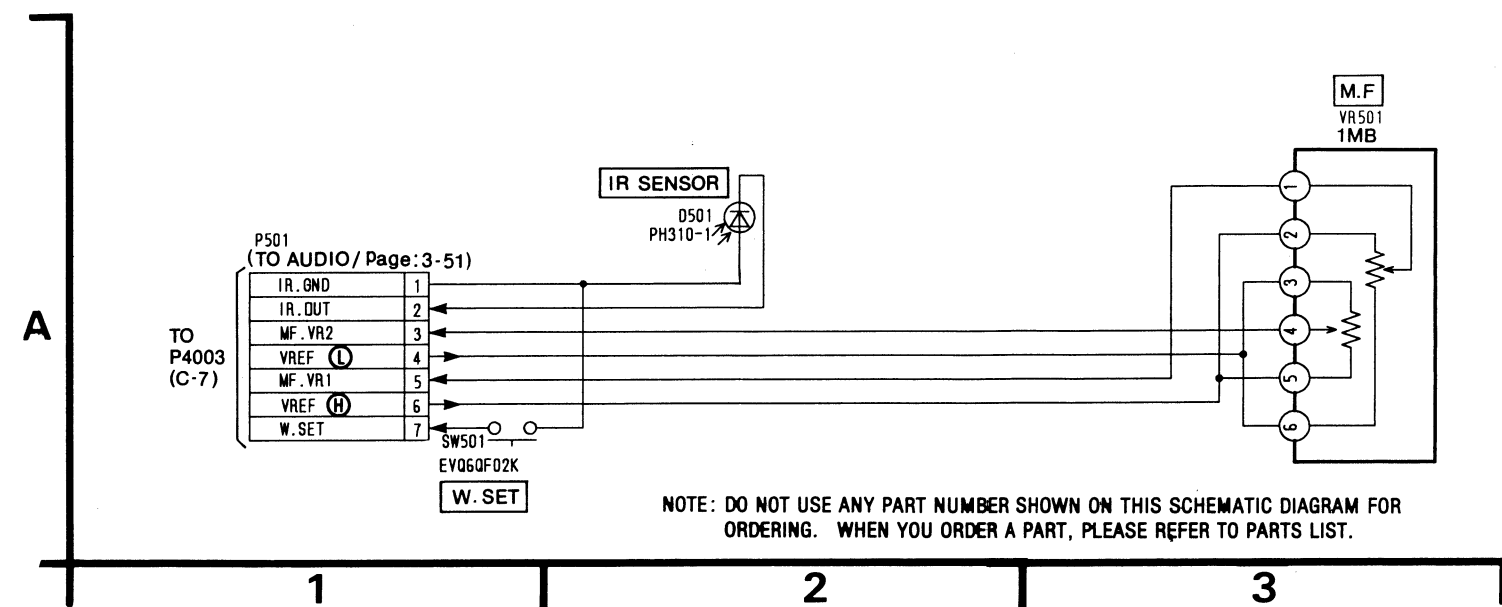
5 6 7 8 9 10 11 12 13



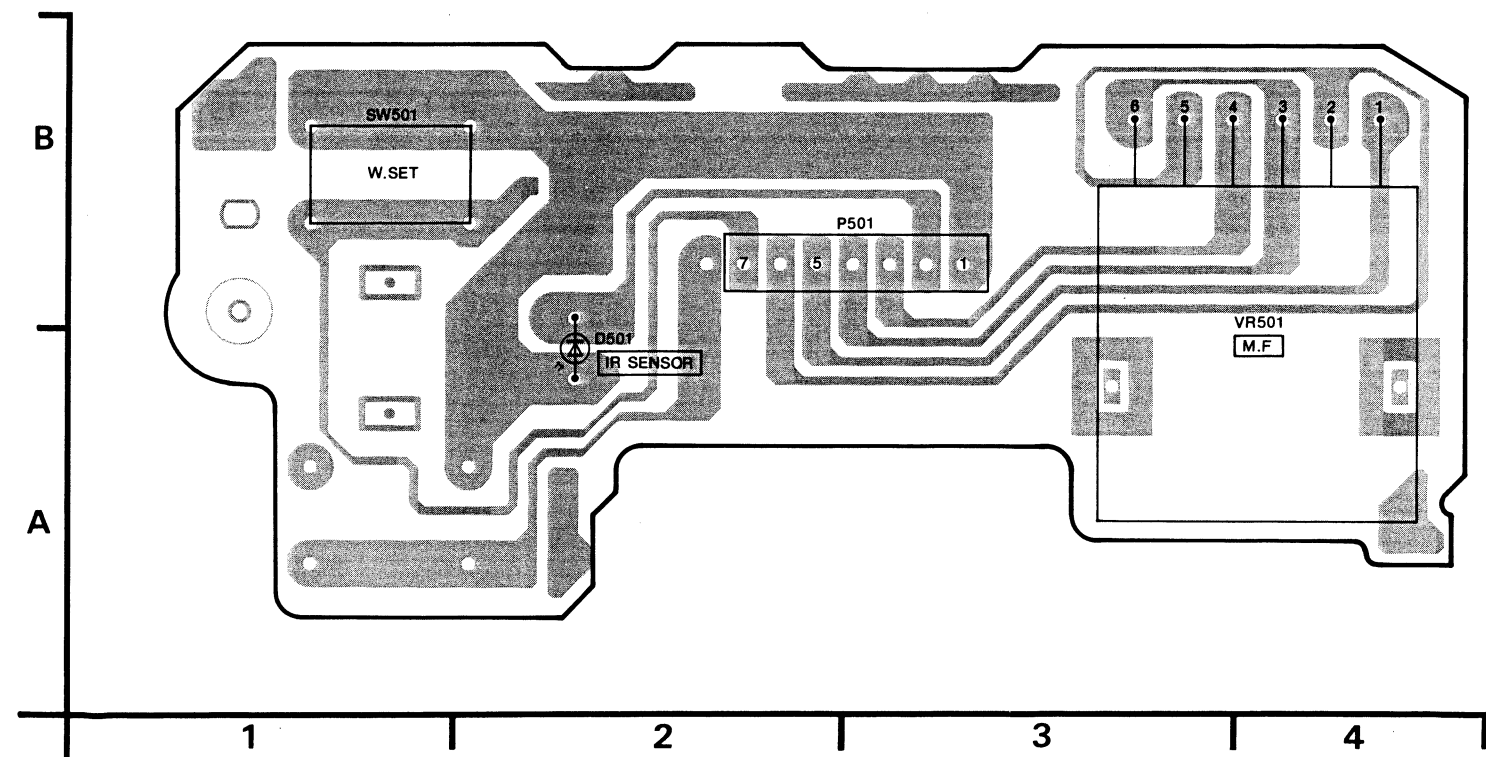
EVF C.B.A.	
Integrated Circuit	
IC801	B-10
Transistor	
Q802	B-2
Q803	A-11
Q804	A-11
Q805	A-1
Transistor & Resistor	
QR881	A-10
QR882	A-10
Adjustment	
VR801	A-3
VR803	B-4
VR804	B-3
Connector	
B1601	C-9
P801	C-2
P803	C-4
P804	C-5
P1602	A-12

ADDRESS INFORMATION

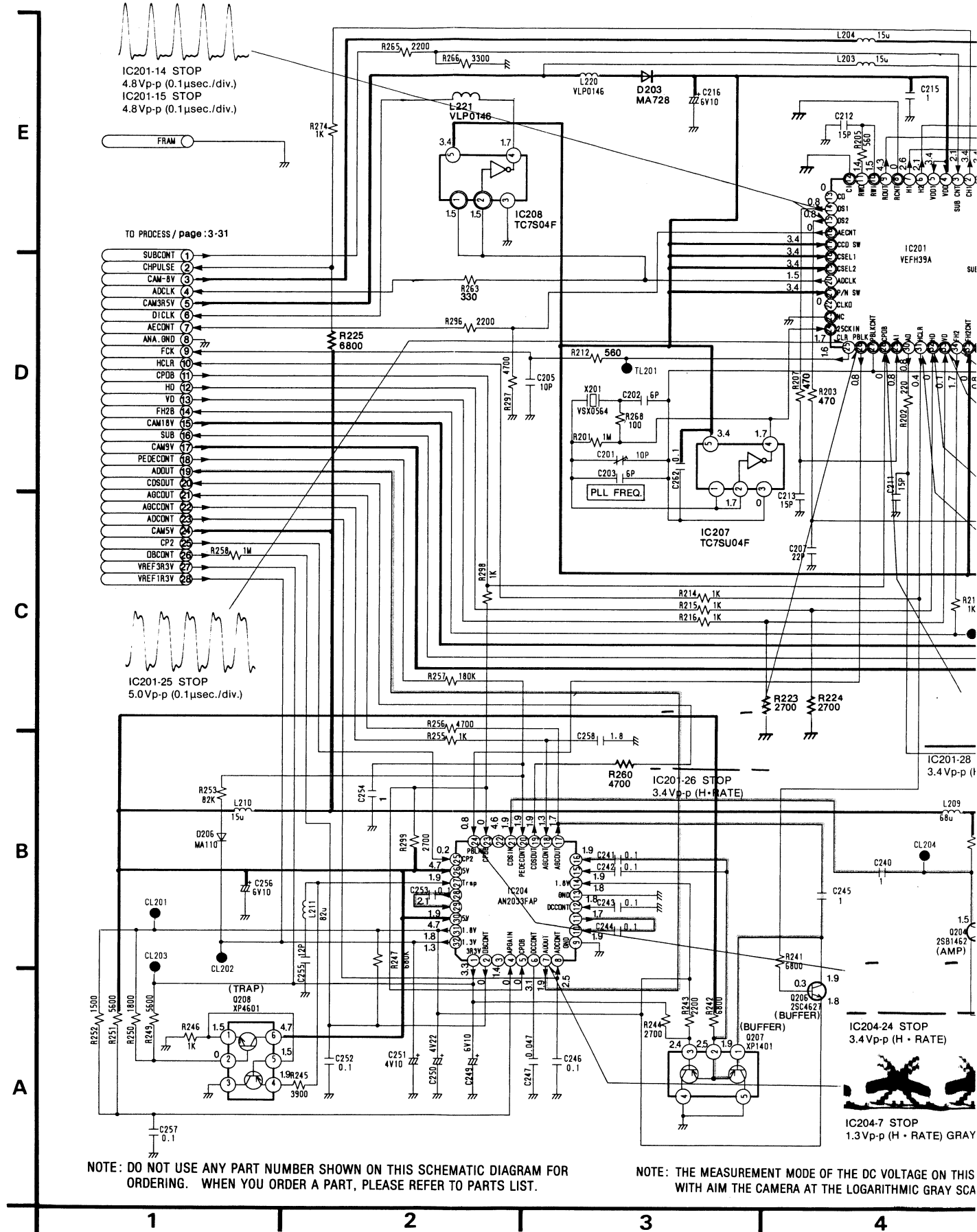
3-11. FRONT OPERATION SCHEMATIC DIAGRAM



3-12. FRONT OPERATION C.B.A. (VEP00T97A)



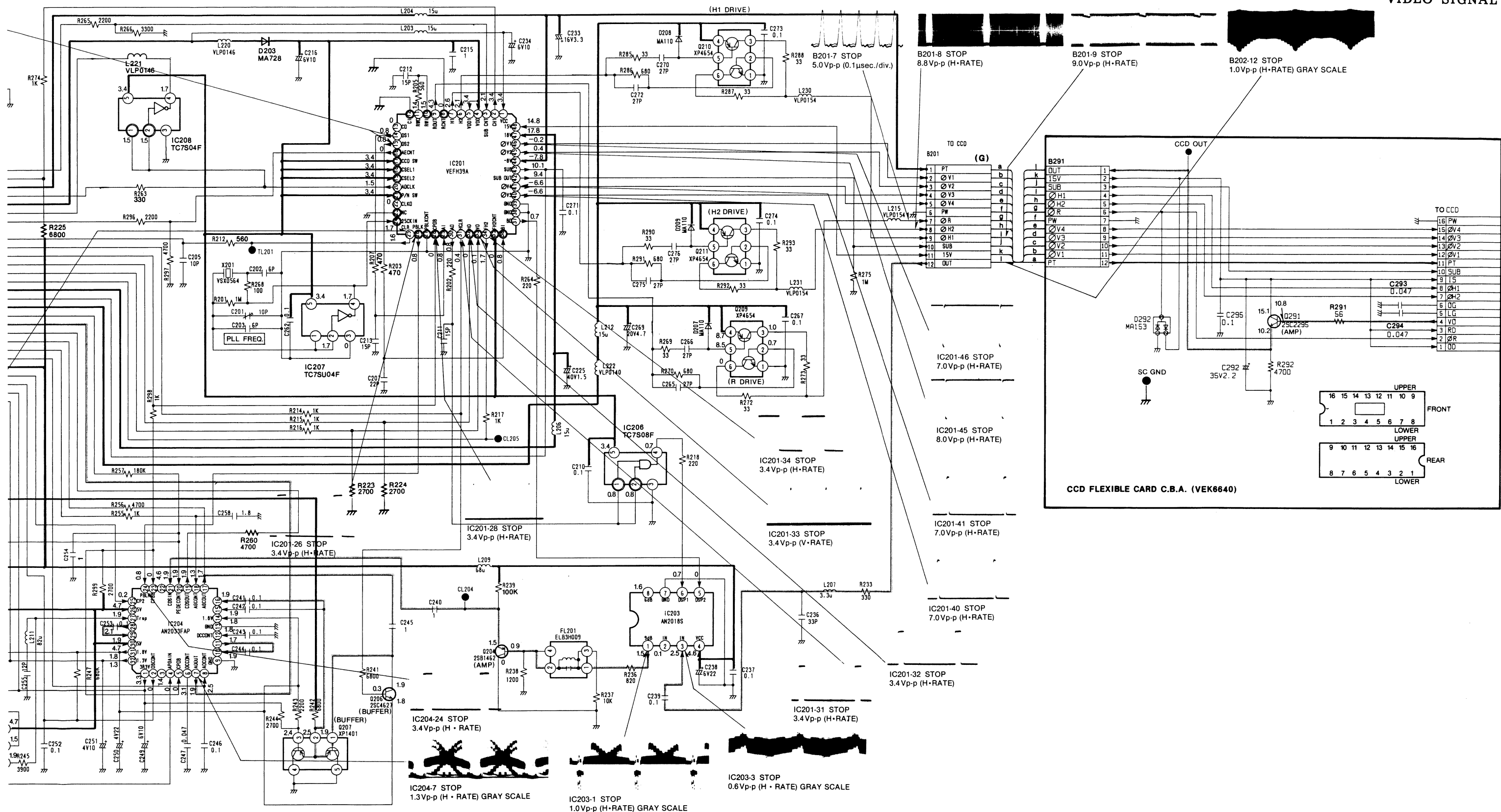
FRONT OPE. & SENSOR Section
3-13. SENSOR SCHEMATIC DIAGRAM



FRONT OPE. & SENSOR Section

MATIC DIAGRAM

VIDEO SIGNAL



NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

CCD FLEXIBLE CARD C.B.A. (VEK6640)

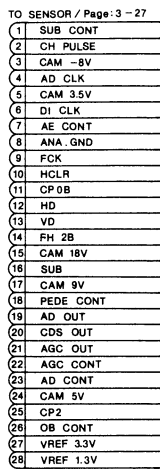
Test Points and Waveforms:

- B201-7 STOP: 5.0Vp-p (0.1μsec./div.)
- B201-8 STOP: 8.8Vp-p (H·RATE)
- B201-9 STOP: 9.0Vp-p (H·RATE)
- B202-12 STOP: 1.0Vp-p (H·RATE) GRAY SCALE
- IC201-46 STOP: 7.0Vp-p (H·RATE)
- IC201-45 STOP: 8.0Vp-p (H·RATE)
- IC201-41 STOP: 7.0Vp-p (H·RATE)
- IC201-40 STOP: 7.0Vp-p (H·RATE)
- IC201-32 STOP: 3.4Vp-p (H·RATE)
- I-31 STOP: 3.4Vp-p (H·RATE)

Connector Pinout:

UPPER	FRONT	LOWER	UPPER	REAR	LOWER
16	16	16	16	16	16
15	15	15	15	15	15
14	14	14	14	14	14
13	13	13	13	13	13
12	12	12	12	12	12
11	11	11	11	11	11
10	10	10	10	10	10
9	9	9	9	9	9
8	8	8	8	8	8
7	7	7	7	7	7
6	6	6	6	6	6
5	5	5	5	5	5
4	4	4	4	4	4
3	3	3	3	3	3
2	2	2	2	2	2
1	1	1	1	1	1

A — B — C — D — E — F — G —



(TO CAM. OPERATION/Page:3-53,B-1)	
FP301	(L)
BLC	1
AF / MF	2
DATE	3
GND	4
MODE 1	5
MODE 2	6
MODE 0	7

TO AUDIO / Page:3-51

1	W. SET	→
2	VREF H	←
3	VREF L	←
4	MF VR1A	→
5	MF VR2A	→

TO	LENS DRIVE / Page: 3-36
1	NOREG
2	CAM 5V
3	CAM 9V
4	ANA_GND
5	D_GND
6	IRIS OPEN
7	ZENC1
8	VREF (+)
9	VREF (-)
10	VREF +T
11	VREF -T
12	IR_DET
13	CW/CCW
14	CK
15	RESET
16	ENABLE
17	NOREG GND
18	PWMA
19	FNO
20	HOLE BIAS
21	HOLE GAIN
22	TELE
23	WIDE
24	ZENC4
25	DAC VCC
26	Z_SRD
27	VREF 0
28	VREF 0
29	LED CNT
30	CAM 3.5V
31	ABSF

HD 1.7 Vp-p

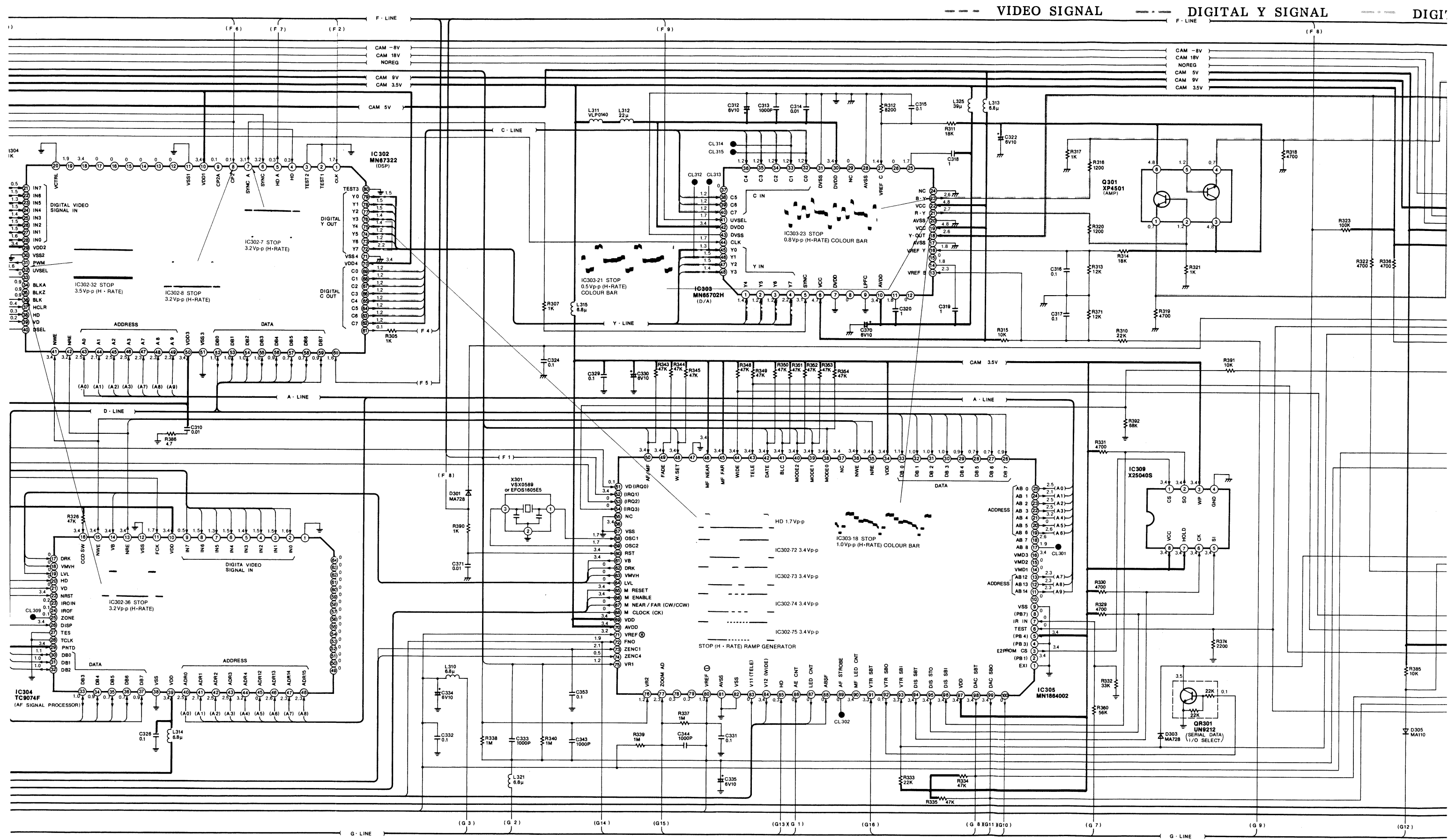
IC301-10 3.4 Vp-p

IC301-9 3.4 Vp-p

IC301-8 3.4 Vp-p

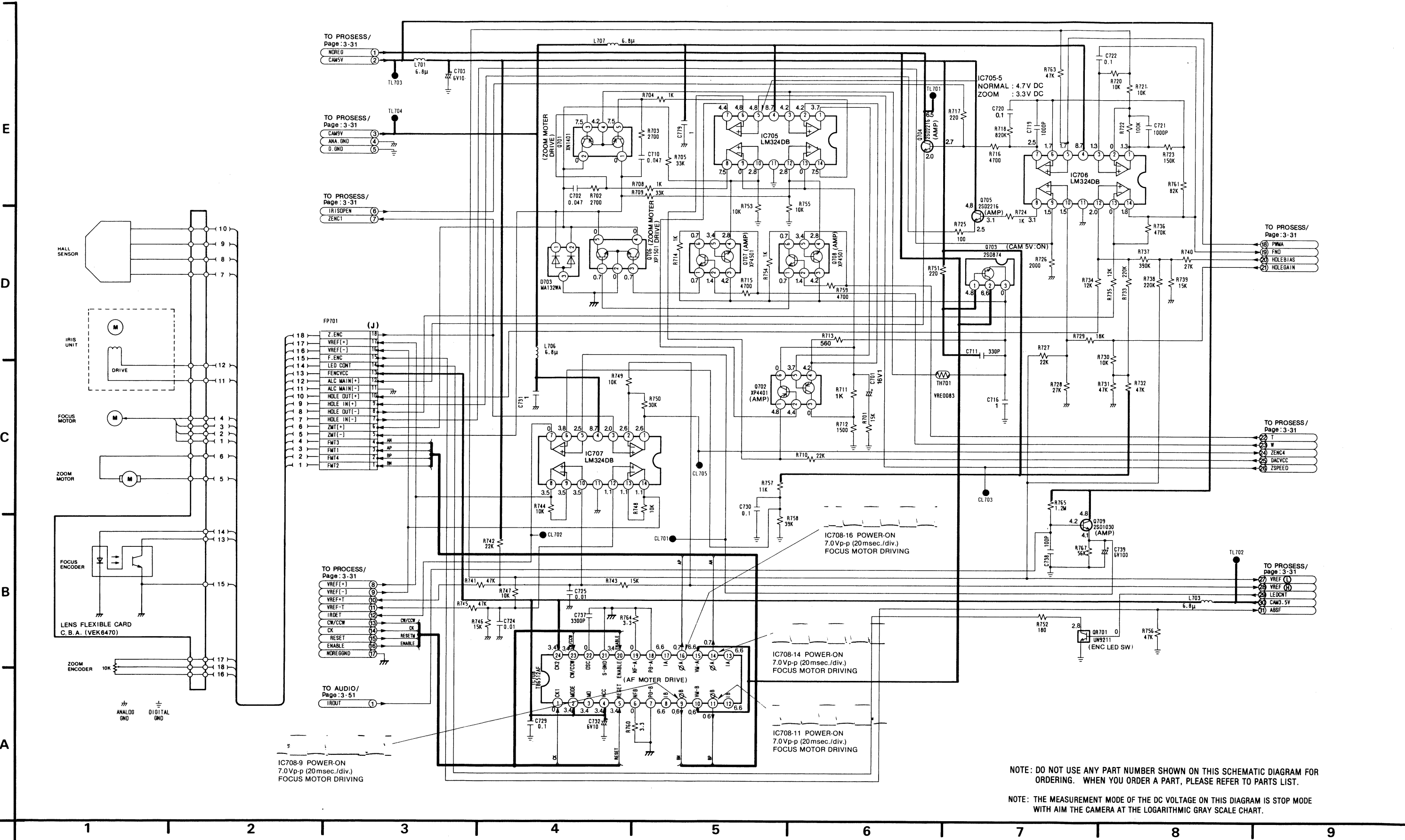
IC301-7 3.4 Vp-p

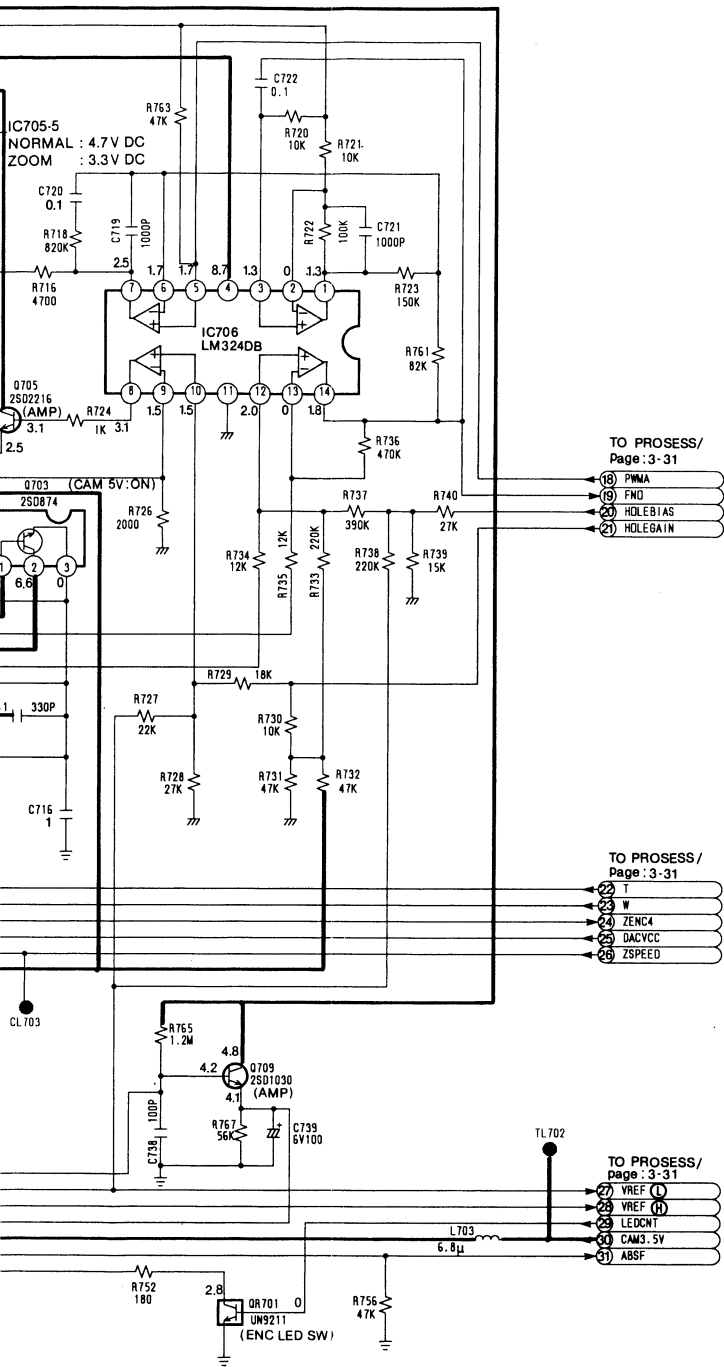
STOP (H - RATE) RAMP GENERATOR



3-15. LENS DRIVE SCHEMATIC DIAGRAM

LENS DRIVE & POWER Section

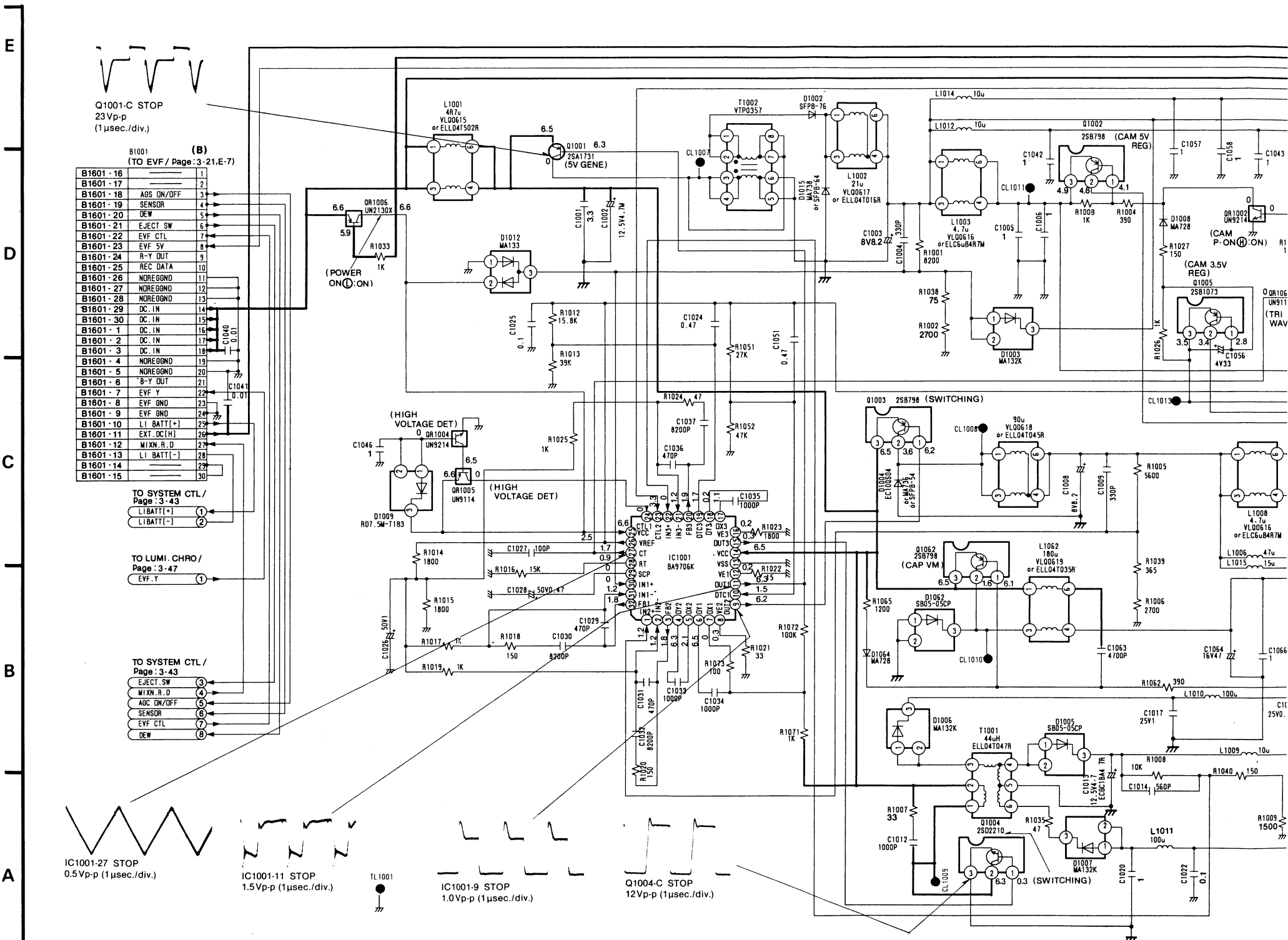




NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

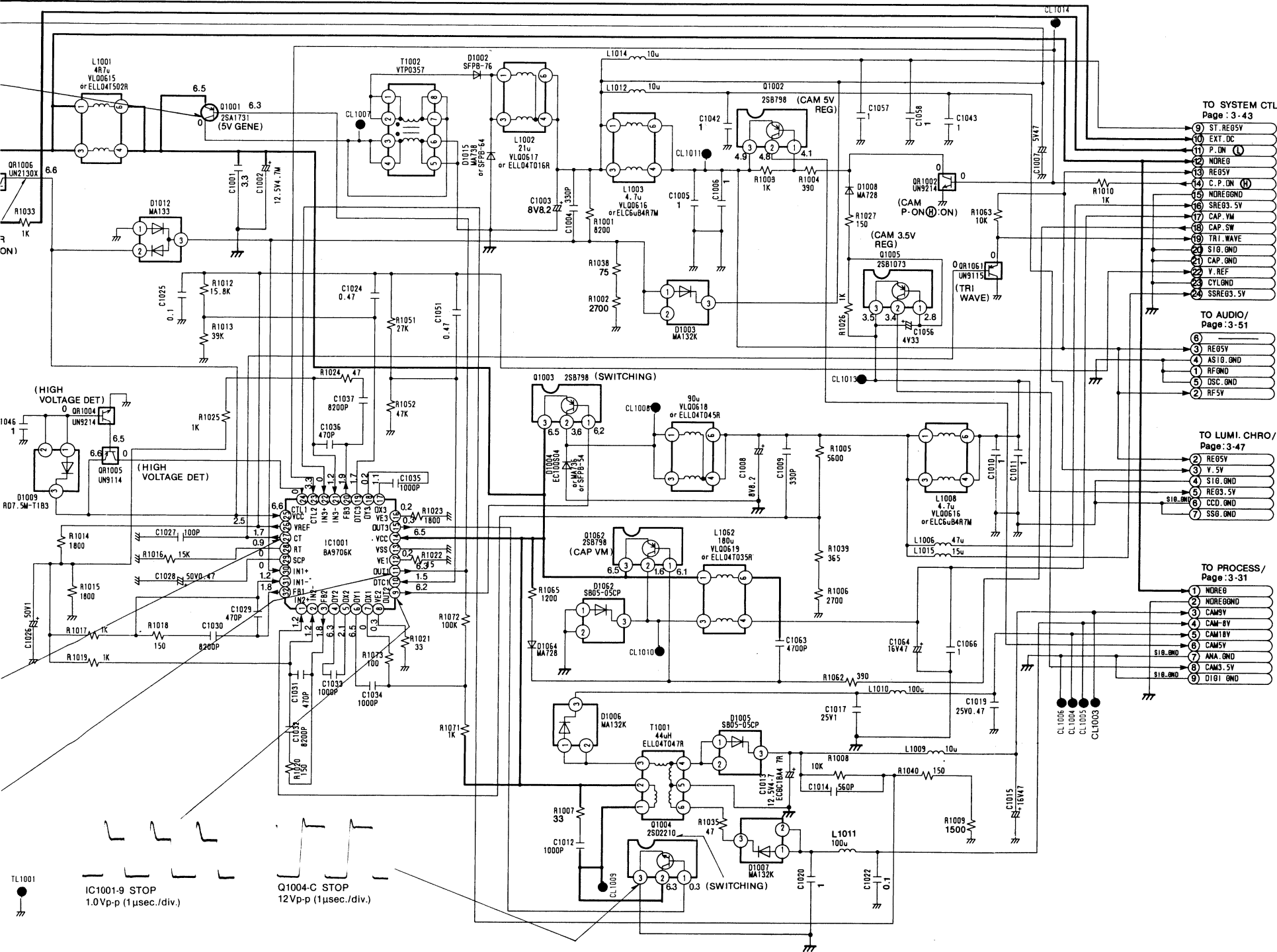
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

3-16. POWER SCHEMATIC DIAGRAM



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MOD

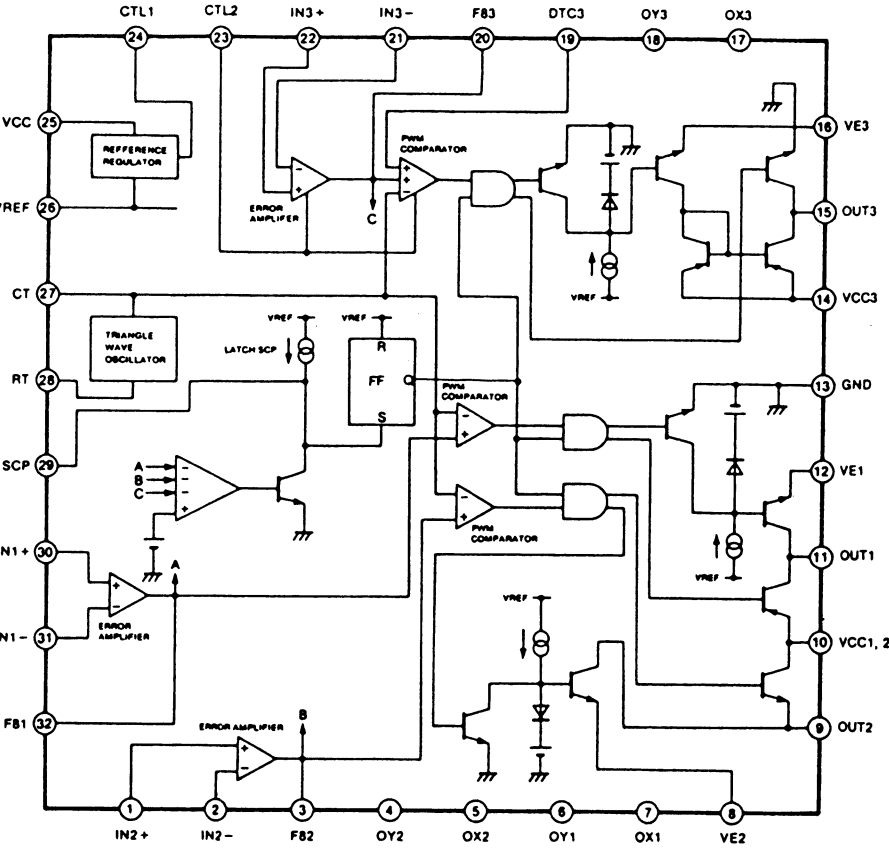


IN THIS SCHEMATIC DIAGRAM FOR
LEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

IC BLOCK

IC1001 (BA9706K)



SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	3.6	3.7	0	0	3.7	3.6	0	3.7	0	0	0	0	0	3.7	0	0	0	0	0.4
PLAY	0	0	3.7	0	0	3.7	3.7	3.7	0	3.7	3.7	0	0	0	3.7	2.7	0	0	0	0
F.F	0	3.6	3.7	0	0	3.3	3.7	0	0	0	0	0	0	0	3.7	2.7	0	0	0	0.5
REF. NO.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	1.6	0	1.8	0	3.7	0	0	0	0	0	0	0	3.1	3.7	2.6	2.3	3.7	1.5	1.9	0
PLAY	1.1	0	1.9	0	0	0	0	0	0	0	0	0	3.1	3.2	2.7	2.7	3.7	3.4	1.9	0
F.F	1.6	0	1.8	0	3.7	0	0	0	0	0	0	0	3.2	3.7	2.5	2.5	3.7	1.5	1.9	0
REF. NO.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	3.7	0	0	0	3.7	1.0	3.7	0	0	0	0	0	3.1	3.1	3.0	3.3	3.4	2.2	1.7	3.7
PLAY	0	0.8	0	0	0	0.9	0.9	0.3	0.2	2.8	2.8	3.1	3.2	0	3.2	3.5	3.4	0	3.7	0
F.F	3.7	0	0	0	3.7	1.3	3.7	0	0	3.7	3.7	3.1	0.3	3.0	3.3	3.4	3.4	0.2	3.7	1.0
REF. NO.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	0	0	3.7	0	3.4	0	3.4	0	1.2	0	0.3	0	0.9	0	0	0	0	0	1.8	1.8
PLAY	0	0	1.7	0	0	0	3.4	3.4	2.0	0	1.2	0	0	1.2	1.7	1.7	0	0	1.8	1.8
F.F	0	0	2.2	0	3.4	0	3.4	0	0	0	1.0	0	0	0	1.7	1.7	0	0	1.8	1.8
REF. NO.	IC6001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	1.6	2.0	3.7	0	0	0	1.8	1.8	0	2.0	1.8	3.7	0.1	3.2	3.7	0	3.4	3.3	2.4	0
PLAY	1.8	0	0	0	0	0	1.8	1.8	0	2.0	1.8	3.7	1.6	2.1	3.7	0	3.4	3.3	2.5	3.8
F.F	0	2.0	3.7	0	0	0	1.8	1.8	0	2.0	1.8	3.7	1.5	2.1	3.7	0	3.4	3.3	2.4	0
REF. NO.	IC6001																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
STOP	0	0	0	0	0	3.7	0	0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	0	3.7
PLAY	0	0	0	3.4	3.4	3.7	0	0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	0
F.F	0	0	0	2.0	2.0	3.7	0	0	0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	0
REF. NO.	IC6001																			
MODE	121	122	123	124	125	126	127	128												
STOP	0.1	0	3.7	3.7	3.7	0	0	0												
PLAY	0.2	0	3.7	3.7	3.7	0	0	0												
F.F	0.1	0	3.7	3.7	3.7	0	0	0												
REF. NO.	IC6002																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	0	0	0	0	0	0	0	1.6	1.6	3.7	0	0	0	1.6						
PLAY	0	0	0	0	0.4	0	0	0.8	0	0	0	0	0	1.6						
F.F	0	0	0	0	0	0.7	0	1.6	1.6	3.7	0	0	0	1.6						
REF. NO.	IC6003																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	3.3	3.0	3.3	3.6	3.4	0	1.4	1.4	0	0	0	0	0	0	0	0	0	0	3.4	3.2
PLAY	3.4	0	3.0	3.6	3.4	0	0.8	1.4	0	0	0	0	0	0	0	0	0	0	3.4	3.2
F.F	3.4	3.0	3.3	0	3.4	0	1.4	1.4	0	0	0	0	0	0	0	0	0	0	3.4	4.2
REF. NO.	IC6004										IC6005									
MODE	1	2	3	4	5						1	2	3	4	5	6	7	8		
STOP	3.2	3.3	0	1.2	3.5						0	6.6	4.9	0	0	3.0	0	0		
PLAY	1.7	0.1	0	0	3.5						0.1	6.7	4.9	0	0	3.0	0	0		
F.F	3.1	3.3	0	1.2	3.5						0	6.5	4.9	0	0	3.0	0.1	0		
REF. NO.	IC6006										IC6007									
MODE	1	2	3	4	5	6	7	8			1	2	3							
STOP	0	0.7	0.6	0	1.7	2.9	0	3.5			0	6.6	3.7							
PLAY	0	0	0	0	1.7	0	3.4	3.5			0	6.7	3.7							
F.F	1.6	0.6	0	0	0	2.9	0	3.5			0	6.5	3.7							
REF. NO.	IC6008										IC6011									
MODE	1	2	3	4	5						1	2	3	4	5					
STOP	0	0	0	3.7	3.7						3.2	3.2	0	0.3	3.5					
PLAY	0	0	0	3.7	3.7						3.3	0.1	0	0	3.5					
F.F	0	0	0	3.7	3.7						3.2	3.2	0	0.4	3.5					

SYSTEM CONTROL & SERVO TRs DC VOLTAGE CHART (SP MODE)

REF. NO.	Q6002			Q6004			Q6005						Q6006			6007		
MODE	E	C	B	E	C	B	1	2	3	4	5	6	E	C	B	E	C	B
STOP	0.1	6.6	0	0	3.5	0	0	2.8	0.1	4.7	0	4.5	6.7	6.6	6.1	0	0	0.6
PLAY	0.1	6.6	0	3.7	1.3	0.2	0	2.7	0.2	4.7	0.1	4.5	6.7	6.6	6.1	0	0	0.6
F.F	0.2	6.4	0.3	0	3.5	0	0	2.7	0.1	4.6	0	4.6	6.5	6.5	5.9	0	0	0.6
REF. NO.	Q6201			Q6300			Q6301											
MODE	E	C	B	E	C	B	E	C	B									
STOP	3.7	3.7	3.1	4.9	0	4.2	3.3	4.1	0									
PLAY	3.7	3.7	3.1	4.9	0	4.2	3.3	4.1	0									
F.F	3.7	3.7	3.1	4.8	0	4.2	3.0	4.8	0									
REF. NO.	QR6001			QR6003			QR6004						QR6006			QR6007		
MODE	E	C	B	E	C	B	1	2	3	4	5	6	E	C	B	E	C	B
STOP	4.9	4.9	4.2	3.5	0	3.7	3.7	3.7	3.4	3.5	0	0	0	0	1.3	0	0	3.7
PLAY	4.9	4.9	4.2	3.5	0	3.7	3.7	3.7	3.4	3.5	0	0	0	0	1.3	0	0	3.7
F.F	4.9	4.9	4.2	3.5	0.2	3.3	3.7	3.7	3.4	3.5	0	0	0	0	1.3	0	0	3.7
REF. NO.	QR6008			QR6010						QR6012					QR6014			
MODE	E	C	B	1	2	3	4	5		1	2	3	4	5		E	C	B
STOP	0	3.4	0	0	0	3.0	0.1	0		0	0	0	1.6	1.6		0	0	5.5
PLAY	0	3.5	0	3.1	0	3.0	0.2	0		0	0	0	1.6	1.5		0	0	5.5
F.F	0	3.4	0	3.1	0	3.0	0.1	0		0	0	0	1.6	1.6		0	0	0
REF. NO.	QR6015			QR6016					QR6018									
MODE	E	C	B	1	2	3	4	5		E	C	B						
STOP	0	6.6	0	0	0	0	0	0		0	1.2	0.6						
PLAY	0	5.8	0	0	0	3.7	0	3.4		0	0.2	0.6						
F.F	0	5.2	0	0	0	3.7	0	3.7		0	0	0.6						

59. CAPSTAN SERVO SPEED LOOP



IC6001-23 STOP

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TOP  
usec./div.)

REG 3.8V

LI BATT

NOREG  
 REG 3.8V  
 REG 5V  
 C - LINE  
 D - LINE

---

9

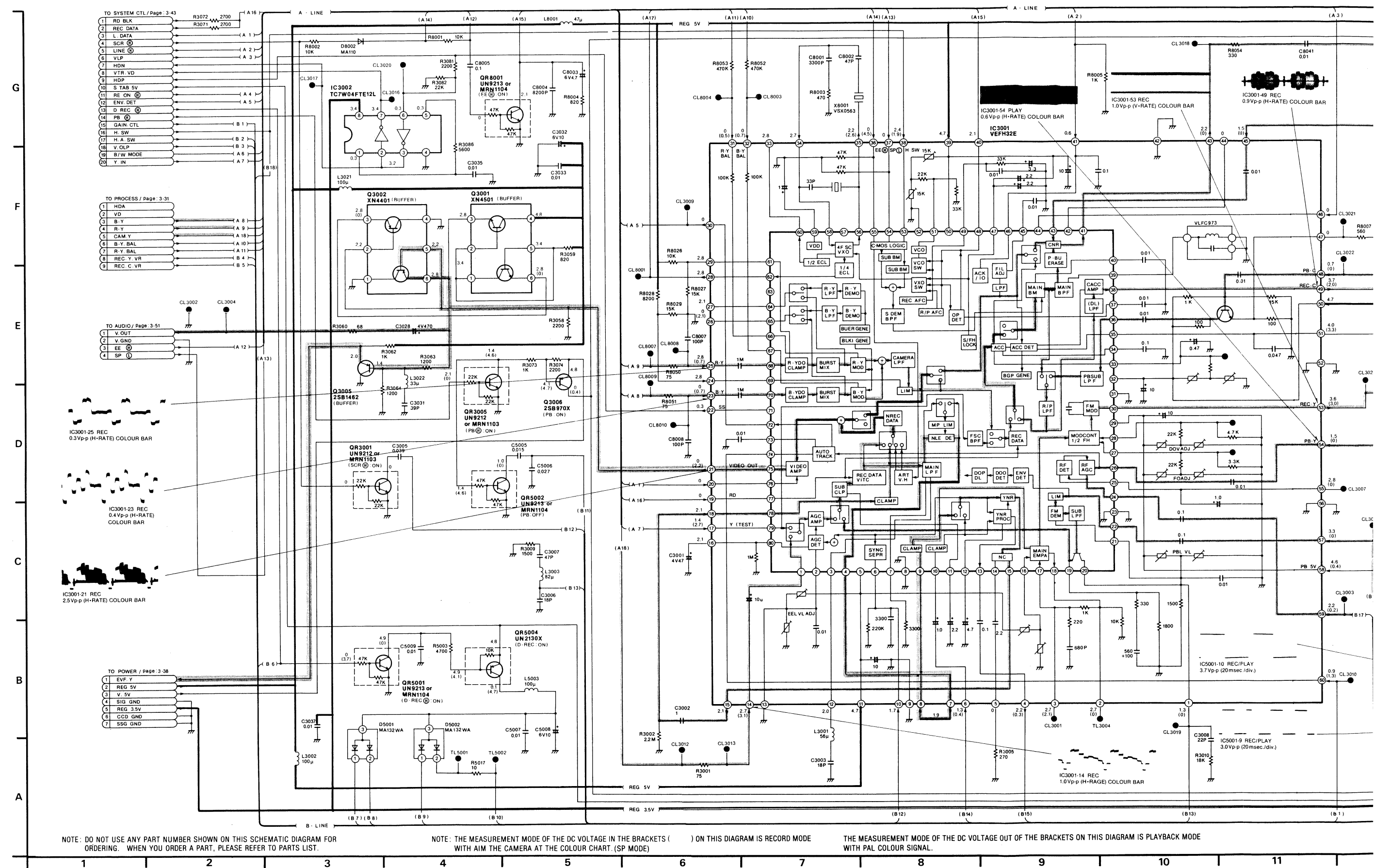
3-44

## CAPSTAN SERVO PHASE LOOP

## CYLINDER SERVO PHASE LOOP



### 3-18. LUMINANCE/CHROMINANCE & HEAD AMP SCHEMATIC DIAGRAM



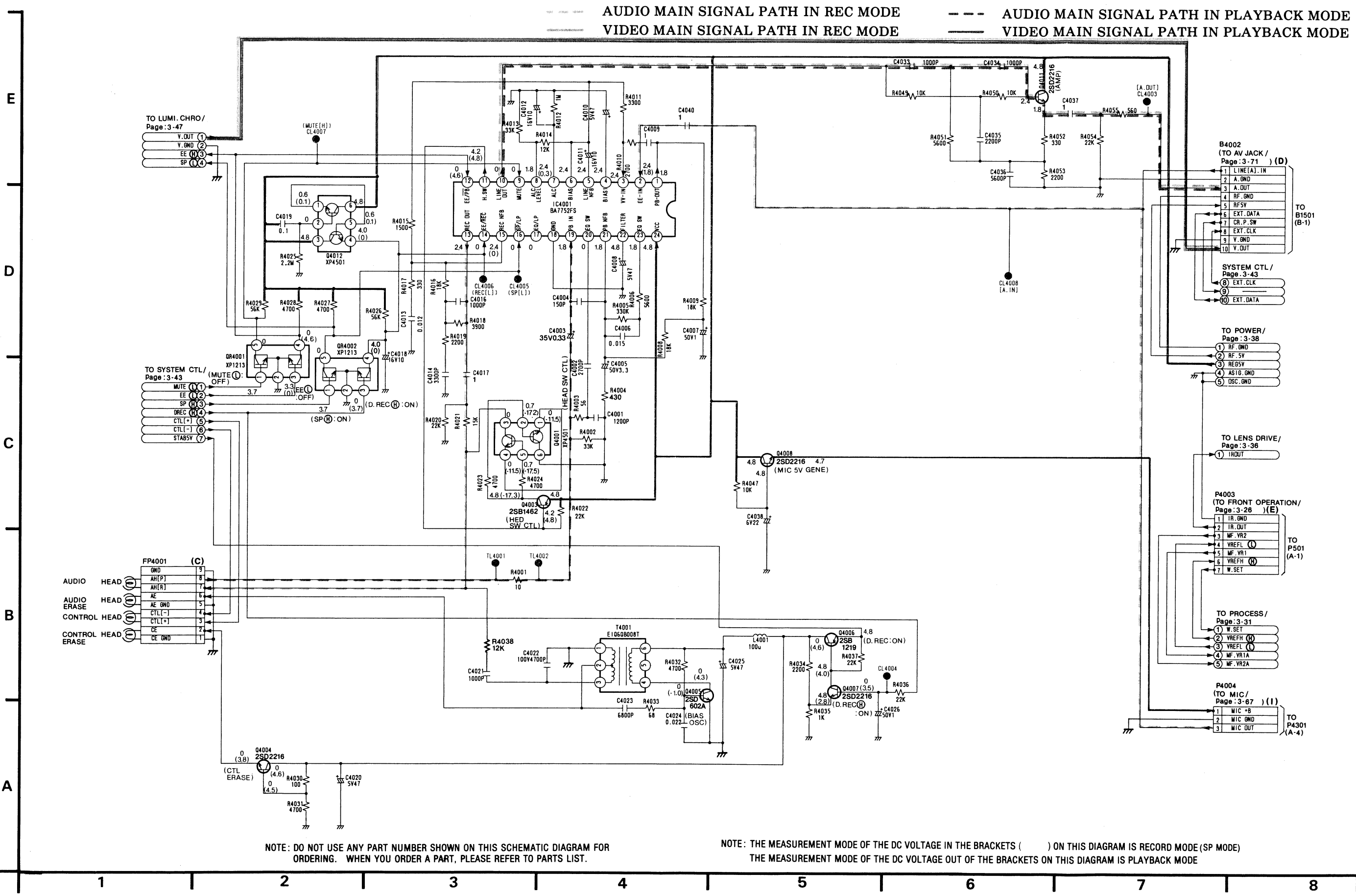
### MAIN SIGNAL PATH IN PLAYBACK MODE



| FP5001<br>(TO CYLINDER) |        | (F) |
|-------------------------|--------|-----|
| 1                       | RE (F) |     |
| 2                       | RE (S) |     |
| 3                       | GND    |     |
| 4                       | R1 (F) |     |
| 5                       | R1 (S) |     |
| 6                       | L1 (F) |     |
| 7                       | L1 (S) |     |
| 8                       | GND    |     |
| 9                       | R2 (F) |     |
| 10                      | R2 (S) |     |
| 11                      | L2 (F) |     |
| 12                      | L2 (S) |     |
| 13                      | GND    |     |

3-19. AUDIO SCHEMATIC DIAGRAM

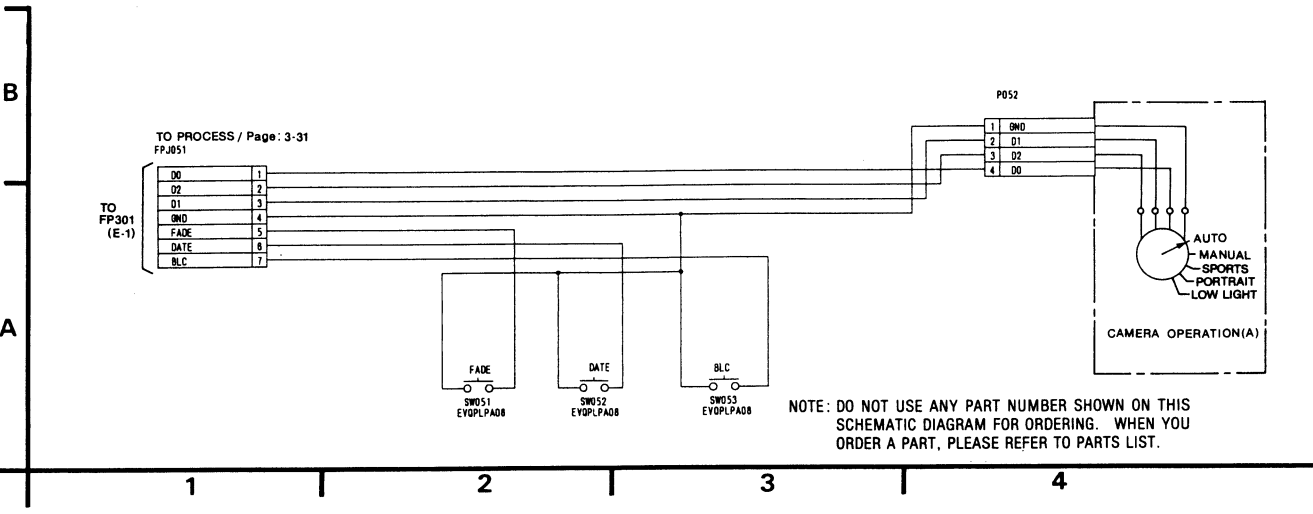
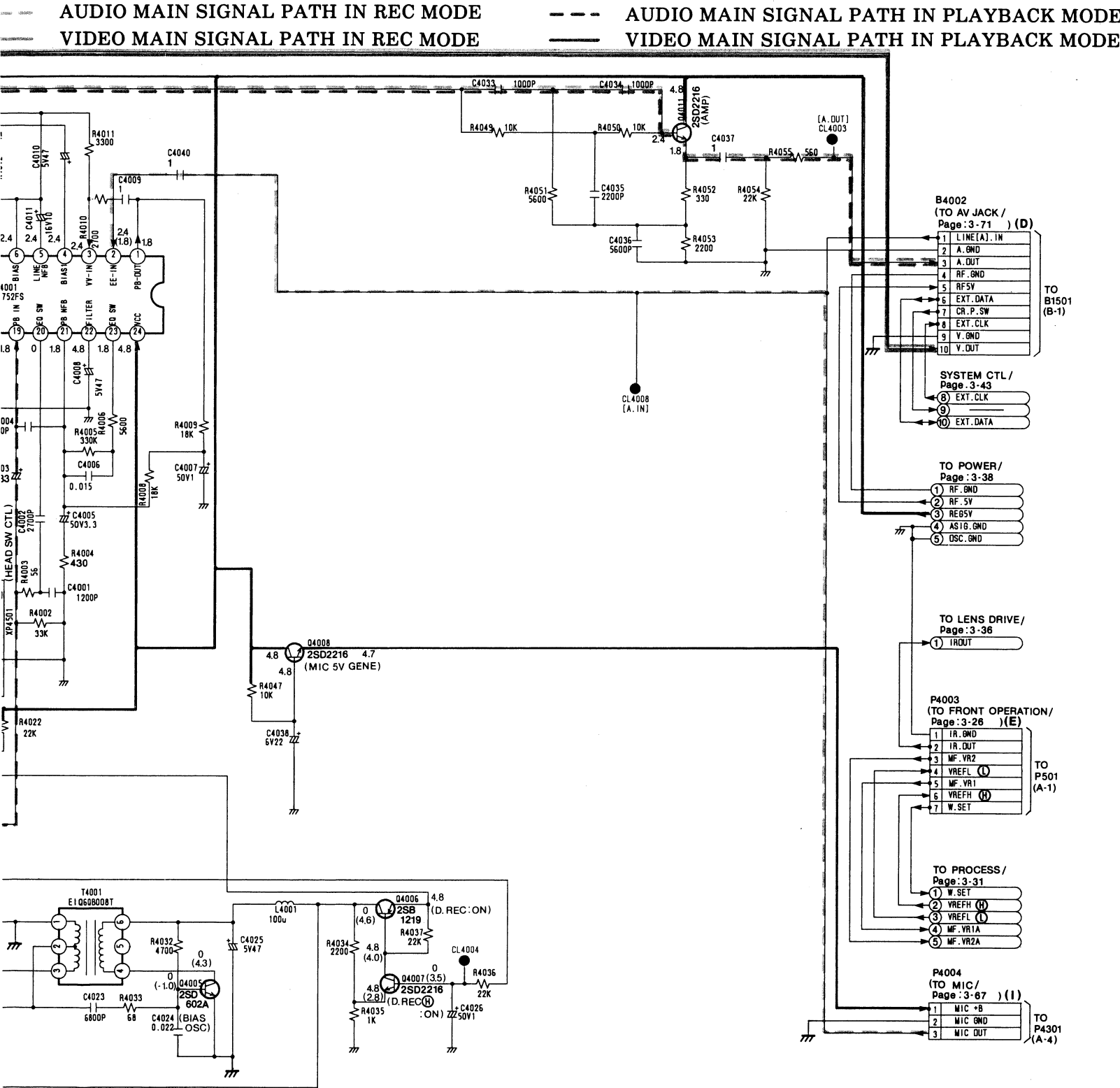
3-20





3-20. CAMERA OPERATION UNIT  
SCHEMATIC DIAGRAM

AUDIO & CAM. OPE. Section



AGRAM FOR  
S LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE (SP MODE)  
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE



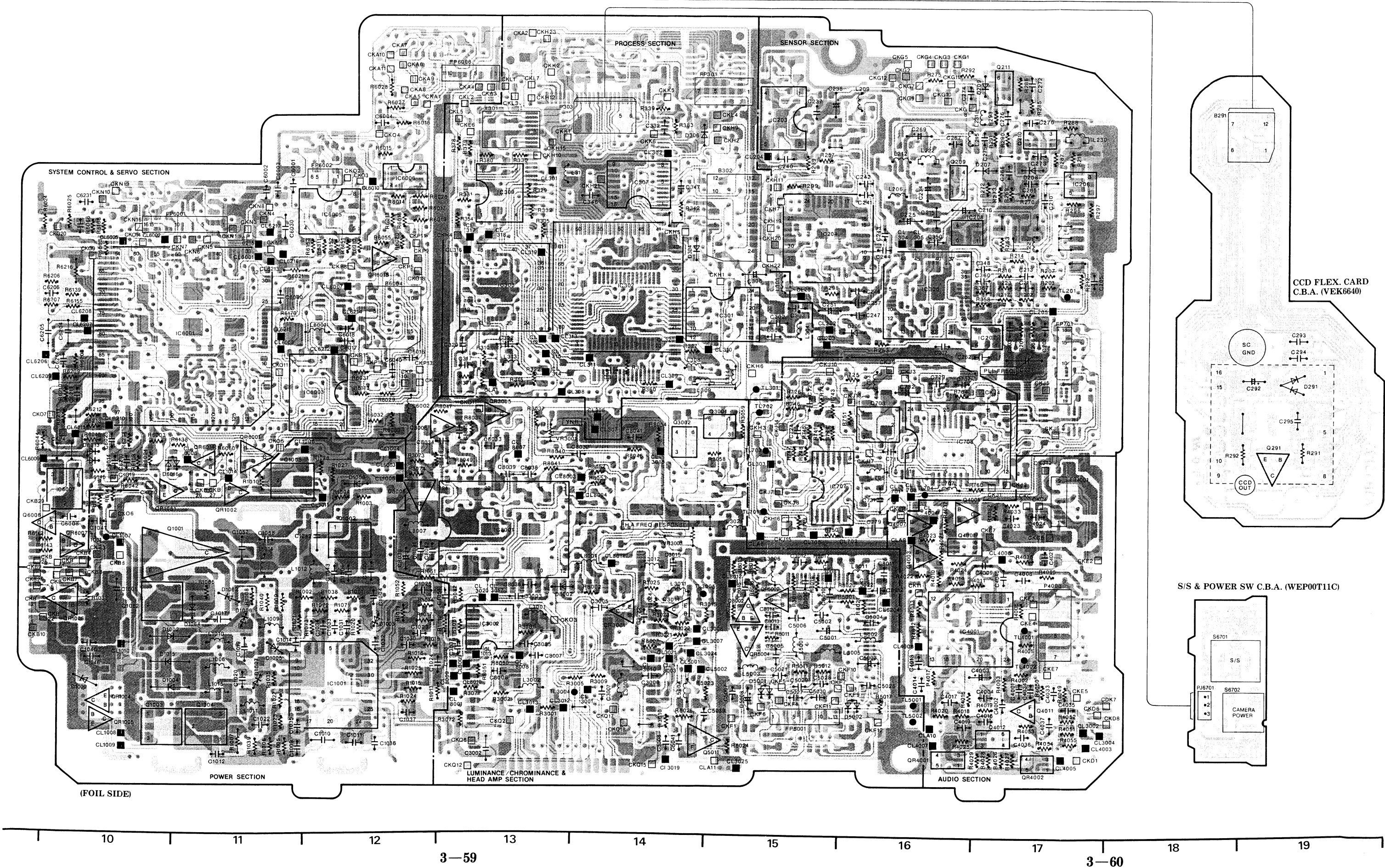
| Integrated Circuit |      | Q5004                 | A-3  | D6303      | F-7  | CL6002     | E-10 | Coil  |      | Capacitor |      | C347  | E-14 | C3012 | C-15 | C5041 | A-14 | R205 | F-1  | R331 | E-13 | R7 |
|--------------------|------|-----------------------|------|------------|------|------------|------|-------|------|-----------|------|-------|------|-------|------|-------|------|------|------|------|------|----|
| IC201              | E-2  | Q5011                 | A-14 | D8002      | B-13 | CL6005     | E-10 | L203  | D-2  | C202      | D-17 | C348  | E-16 | C3015 | B-14 | C5042 | B-4  | R207 | E-17 | R332 | E-13 | R7 |
| IC203              | F-15 | Q5012                 | A-4  | Transfomer |      | CL6006     | C-10 | L204  | E-2  | C203      | D-17 | C350  | E-16 | C3022 | B-14 | C5043 | A-4  | R212 | E-17 | R333 | F-4  | R7 |
| IC204              | E-15 | Q6002                 | E-7  | T1001      |      | CL6007     | E-12 | L206  | E-16 | C205      | D-17 | C351  | D-2  | C3023 | B-4  | C5044 | A-4  | R214 | E-17 | R334 | E-4  | R7 |
| IC206              | E-17 | Q6004                 | D-7  | T1002      |      | CL6008     | D-11 | L207  | F-3  | C207      | D-16 | C352  | E-2  | C3024 | B-4  | C6001 | E-11 | R215 | E-2  | R335 | E-4  | R7 |
| IC207              | D-16 | Q6005                 | D-7  | T4001      |      | CL6009     | C-10 | L209  | F-15 | C210      | E-17 | C353  | F-4  | C3027 | B-4  | C6002 | E-11 | R216 | E-17 | R336 | E-4  | R7 |
| IC208              | E-16 | Q6006                 | C-9  | Test Point |      | CL6010     | E-12 | L210  | E-3  | C211      | E-17 | C360  | E-16 | C3028 | C-4  | C6003 | E-11 | R217 | E-17 | R337 | F-4  | R7 |
| IC301              | D-14 | Q6201                 | E-8  | CLA1       |      | CL6204     | B-16 | L211  | E-3  | C212      | F-1  | C370  | E-5  | C3030 | B-15 | C6004 | F-12 | R218 | F-17 | R338 | F-4  | R7 |
| IC302              | E-14 | Q6300                 | E-6  | CLA8       |      | CL6206     | D-9  | L212  | F-16 | C213      | E-17 | C371  | F-5  | C3031 | C-4  | C6005 | E-7  | R223 | E-17 | R339 | F-14 | R7 |
| IC303              | E-13 | Q6301                 | E-6  | CLA9       |      | CL6207     | D-10 | L215  | F-16 | C215      | E-16 | C701  | D-2  | C3032 | C-4  | C6006 | E-7  | R224 | E-2  | R340 | F-4  | R7 |
| IC304              | D-5  | Q8002                 | B-15 | CLA10      |      | CL6208     | D-10 | L220  | D-2  | C216      | E-16 | C702  | C-2  | C3033 | C-4  | C6007 | E-7  | R225 | F-2  | R342 | E-14 | R7 |
| IC305              | F-5  | Q8003                 | B-3  | CL201      |      | CL6209     | D-9  | L221  | E-17 | C216      | E-16 | C703  | D-2  | C3034 | C-4  | C6008 | C-10 | R233 | F-3  | R343 | F-6  | R7 |
| IC306              | E-16 | Q8004                 | C-6  | CL202      |      | CL6210     | D-10 | L222  | F-16 | C225      | E-16 | C710  | C-1  | C3035 | B-13 | C6011 | E-8  | R236 | F-3  | R344 | F-5  | R7 |
| IC307              | E-14 | Q8005                 | D-5  | CL203      |      | CL6211     | D-10 | L230  | F-17 | C233      | E-2  | C711  | C-16 | C3037 | B-13 | C6012 | E-7  | R237 | F-3  | R345 | F-5  | R7 |
| IC308              | F-4  | Q8006                 | D-12 | CL204      |      | CL6212     | D-12 | L231  | F-16 | C234      | E-16 | C716  | D-2  | C3040 | C-6  | C6013 | E-8  | R238 | F-3  | R348 | F-5  | R7 |
| IC309              | E-13 | Transistor & Resistor |      | CL203      |      | CL6213     | E-11 | L301  | D-3  | C236      | F-3  | C719  | C-3  | C3041 | C-6  | C6014 | C-10 | R239 | F-15 | R349 | F-5  | R7 |
| IC705              | C-2  | QR301                 |      | CL204      |      | CL6214     | D-12 | L302  | D-3  | C237      | F-15 | C720  | C-3  | C3042 | C-5  | C6015 | D-12 | R241 | F-3  | R350 | F-6  | R7 |
| IC706              | C-3  | QR701                 |      | CL205      |      | CL6215     | E-11 | L303  | D-3  | C238      | F-15 | C721  | C-3  | C3043 | C-5  | C6017 | D-12 | R242 | E-3  | R351 | F-5  | R7 |
| IC707              | C-15 | QR1002                |      | CL301      |      | CL6216     | E-11 | L304  | D-15 | C239      | F-3  | C722  | C-3  | C4001 | B-17 | C6018 | D-12 | R243 | F-3  | R352 | F-5  | R7 |
| IC708              | C-16 | QR1004                |      | CL302      |      | CL6217     | E-11 | L305  | E-15 | C240      | F-15 | C724  | D-15 | C4002 | A-17 | C6022 | D-6  | R244 | F-3  | R353 | F-6  | R7 |
| IC1001             | B-12 | QR1005                |      | CL303      |      | CL6218     | D-11 | L306  | D-3  | C241      | E-16 | C725  | D-15 | C4003 | B-16 | C6023 | E-6  | R245 | E-3  | R354 | E-12 | R7 |
| IC3001             | B-5  | QR1006                |      | CL304      |      | CL8001     | A-13 | L307  | E-3  | C242      | E-16 | C729  | D-16 | C4004 | A-16 | C6024 | E-10 | R246 | E-3  | R355 | D-2  | R7 |
| IC3002             | B-13 | QR1061                |      | CL305      |      | CL8003     | C-13 | L308  | D-14 | C243      | E-16 | C730  | D-2  | C4005 | A-1  | C6025 | C-10 | R247 | E-3  | R356 | E-2  | R7 |
| IC4001             | B-16 | QR3001                |      | CL306      |      | CL8004     | C-13 | L309  | D-14 | C244      | E-16 | C731  | C-16 | C4006 | B-17 | C6027 | D-7  | R249 | E-3  | R357 | E-16 | R7 |
| IC5001             | B-3  | QR3003                |      | CL307      |      | CL8007     | C-13 | L310  | D-3  | C245      | F-3  | C732  | D-16 | C4007 | B-1  | C6030 | E-11 | R250 | E-3  | R358 | E-16 | R1 |
| IC6001             | D-10 | QR3003                |      | CL308      |      | CL8008     | B-13 | L311  | E-6  | C246      | E-16 | C737  | D-16 | C4008 | A-5  | C6031 | D-7  | R251 | E-3  | R359 | D-2  | R1 |
| IC6002             | E-7  | QR3004                |      | CL309      |      | CL8008     | B-13 | L312  | E-6  | C247      | D-16 | C738  | B-1  | C4009 | B-16 | C6040 | D-12 | R252 | E-3  | R360 | D-14 | R1 |
| IC6003             | D-11 | QR3005                |      | CL310      |      | CL8009     | B-12 | L313  | D-13 | C249      | E-3  | C739  | B-2  | C4010 | A-2  | C6060 | E-11 | R253 | D-16 | R361 | D-4  | R1 |
| IC6004             | E-6  | QR4001                |      | CL311      |      | CL8010     | B-13 | L314  | D-15 | C250      | E-3  | C779  | C-16 | C4011 | B-2  | C6100 | D-7  | R255 | E-3  | R371 | D-13 | R1 |
| IC6005             | E-12 | QR4002                |      | CL312      |      | CL8012     | B-15 | L315  | E-4  | C251      | D-15 | C1001 | B-10 | C4012 | A-2  | C6201 | E-8  | R256 | F-3  | R374 | F-5  | R1 |
| IC6006             | F-12 | QR5001                |      | CL313      |      | CL8014     | C-14 | L316  | F-4  | C252      | E-3  | C1002 | B-7  | C4013 | B-16 | C6203 | D-8  | R257 | F-15 | R375 | F-6  | R1 |
| IC6007             | C-10 | QR5002                |      | CL314      |      | TL201      | E-17 | L317  | E-13 | C253      | E-3  | C1003 | B-7  | C4014 | B-16 | C6204 | D-10 | R258 | E-3  | R376 | F-5  | R1 |
| IC6008             | C-8  | QR5004                |      | CL315      |      | TL301      | D-15 | L318  | D-3  | C254      | E-3  | C1004 | B-12 | C4015 | B-16 | C6205 | D-9  | R260 | E-3  | R377 | F-6  | R1 |
| IC8001             | C-13 | QR5005                |      | CL316      |      | TL701      | C-15 | L319  | F-4  | C255      | E-3  | C1005 | B-12 | C4016 | A-16 | C6206 | E-9  | R263 | E-17 | R378 | F-12 | R1 |
| Transistor         |      | QR6001                |      | CL317      |      | TL702      | D-15 | L321  | D-3  | C256      | E-3  | C1006 | B-12 | C4017 | A-16 | C6207 | D-8  | R264 | D-2  | R379 | F-13 | R1 |
|                    |      | QR6003                |      | CL318      |      | TL703      | C-15 | L325  | E-5  | C257      | E-16 | C1007 | B-8  | C4018 | A-2  | C6208 | D-8  | R265 | F-2  | R380 | F-13 | R1 |
|                    |      | QR6004                |      | CL319      |      | TL704      | C-16 | L701  | D-2  | C258      | E-3  | C1008 | A-7  | C4019 | A-16 | C6209 | D-8  | R266 | F-2  | R381 | F-5  | R1 |
|                    |      | QR6007                |      | CL320      |      | TL1001     | C-10 | L703  | D-16 | C262      | D-16 | C1009 | A-11 | C4020 | C-1  | C6210 | C-10 | R268 | D-17 | R382 | F-4  | R1 |
|                    |      | QR6008                |      | CL701      |      | TL3004     | B-13 | L706  | C-16 | C265      | E-17 | C1010 | A-11 | C4021 | C-17 | C6211 | D-10 | R269 | E-17 | R383 | F-14 | R1 |
|                    |      | QR6010                |      | CL702      |      | TL3005     | B-14 | L707  | C-16 | C266      | E-17 | C1011 | A-12 | C4022 | C-1  | C6213 | C-8  | R270 | E-17 | R385 | E-4  | R1 |
|                    |      | QR6012                |      | CL703      |      | TL4001     | B-17 | L1001 | A-8  | C267      | F-16 | C1012 | A-11 | C4023 | C-17 | C6214 | D-10 | R272 | E-16 | R386 | D-14 | R1 |
|                    |      | QR6014                |      | CL705      |      | TL4002     | B-17 | L1002 | B-7  | C269      | F-16 | C1013 | B-7  | C4024 | C-17 | C6221 | D-8  | R273 | E-17 | R390 | F-5  | R1 |
|                    |      | QR6015                |      | CL1003     |      | TL5001     | A-16 | L1003 | C-7  | C270      | F-17 | C1014 | B-11 | C4025 | C-2  | C6230 | D-8  | R274 | F-2  | R391 | F-5  | R1 |
|                    |      | QR6016                |      | CL1004     |      | TL5002     | A-16 | L1006 | B-11 | C271      | E-2  | C1015 | C-7  | C4026 | C-2  | C6231 | E-9  | R275 | F-16 | R392 | F-5  | R1 |
|                    |      | QR6018                |      | CL1005     |      | TP8001     | F-1  | L1007 | A-8  | C272      | F-17 | C1017 | B-11 | C4033 | B-17 | C8001 | C-5  | R285 | F-17 | R701 | D-2  | R1 |
|                    |      | QR8001                |      | CL1006     |      |            |      | L1008 | A-7  | C273      | F-17 | C1019 | B-11 | C4034 | B-17 | C8002 | C-5  | R286 | F-17 | R702 | C-2  | R1 |
|                    |      |                       |      | CL1007     |      | Adjustment |      | L1009 | B-11 | C274      | F-16 | C1020 | B-11 | C4035 | A-17 | C8003 | C-5  | R287 | F-17 | R703 | C-1  | R1 |
|                    |      |                       |      | CL1008     |      | C201       |      | L1010 | B-11 | C275      | F-16 | C1022 | A-11 | C4036 | A-17 | C8004 | C-5  | R288 | F-17 | R704 | C-2  | R1 |
|                    |      |                       |      | CL1009     |      | VR3001     |      | L1011 | A-11 | C276      | F-17 | C1024 | B-12 | C4037 | A-17 | C8005 | C-5  | R290 | F-17 | R705 | C-2  | R1 |
|                    |      |                       |      | CL1010     |      | VR3003     |      | L1012 | B-11 | C301      | D-3  | C1025 | B-12 | C4038 | B-2  | C8007 | B-13 | R291 | F-16 | R708 | C-1  | R1 |
|                    |      |                       |      | CL1011     |      |            |      | L1014 | B-11 | C302      | D-15 | C1026 | B-6  | C4040 | B-17 | C8008 | B-13 | R292 | F-16 | R709 | C-1  | R1 |
|                    |      |                       |      | CL1013     |      |            |      | L1015 | B-11 | C303      | D-15 | C1027 | B-6  | C5001 | B-15 | C8010 | B-15 | R293 | F-16 | R710 | C-2  | R1 |
|                    |      |                       |      | CL1014     |      |            |      | L1062 | C-8  | C304      | D-3  | C1028 | B-6  | C5002 | B-15 | C8011 | B-16 | R295 | D-2  | R711 | D-2  | R1 |
|                    |      |                       |      | CL3001     |      |            |      | L3001 | B-13 | C305      | D-15 | C1029 | B-12 | C5003 | B-16 | C8012 | B-16 | R296 | E-17 | R712 | C-2  | R1 |
|                    |      |                       |      | CL3002     |      |            |      | L3002 | B-13 | C306      | E-15 | C1030 | B-12 | C5004 | E-16 | C8013 | B-15 | R297 | E-17 | R713 | D-2  | R1 |
|                    |      |                       |      | CL3003     |      |            |      | L3003 | B-14 | C307      | E-4  | C1031 | B-12 | C5005 | B-15 | C8014 | B-15 | R298 | E-15 | R714 | D-2  | R1 |
|                    |      |                       |      | CL3004     |      |            |      | L3005 | B-15 | C308      | E-4  | C1032 | B-12 | C5006 | B-15 | C8015 | B-15 | R299 | E-15 | R715 | D-2  | R1 |
|                    |      |                       |      | CL3006     |      |            |      | L3006 | B-15 | C310      | D-14 | C1033 | B-12 | C5007 | D-15 | C8020 | C-6  | R301 | D-3  | R716 | C-3  | R1 |
|                    |      |                       |      | CL3007     |      |            |      | L3011 | B-14 | C312      | E-5  | C1034 | B-11 | C5008 | B-15 | C8021 | C-6  | R302 | E-4  | R717 | D-3  | R1 |
|                    |      |                       |      | CL3008     |      |            |      | L3012 | C-14 | C313      | E-5  | C8022 | A-11 | C5009 | B-4  | C8022 | C-6  | R303 | E-4  | R718 | C-3  | R1 |
|                    |      |                       |      | CL3009     |      |            |      | L3013 | C-4  | C314      | E-6  | C1036 | A-12 | C5011 | B-3  | C8023 | C-6  | R304 | E-5  | R720 | C-3  | R1 |
|                    |      |                       |      | CL3010     |      |            |      | L3014 | B-4  | C315      | D-5  | C1037 | A-12 | C5013 | B-3  | C8024 | C-6  | R305 | E-13 | R721 | C-3  | R1 |
|                    |      |                       |      | CL3012     |      |            |      | L3015 | C-6  | C316      | D-5  | C8025 | B-10 | C5014 | E-6  | C8025 | C-6  | R307 | E-6  | R722 | C-3  | R1 |
|                    |      |                       |      | CL3013     |      |            |      | L3016 | C-5  | C317      | D-13 | C1041 | C-10 | C5021 | B-15 | C8026 | D-5  | R310 | D-13 | R723 | C-2  | R3 |
|                    |      |                       |      | CL3016     |      |            |      | L3021 | C-15 | C318      | D-5  | C1042 | C-11 | C5022 | B-4  | C8027 | C-5  | R311 | D-5  | R724 | D-3  | R3 |
|                    |      |                       |      | CL3017     |      |            |      | L3022 | C-4  | C319      | D-5  | C1043 | B-12 | C5023 | B-3  | C8030 | C-12 | R312 | D-5  | R725 | D-15 | R3 |
|                    |      |                       |      | CL3018     |      |            |      | L4001 | B-1  | C320      | D-13 | C1046 | B-10 | C5024 | A-3  | C8031 | C-12 | R313 | D-5  | R726 | D-15 | R3 |
|                    |      |                       |      | CL3019     |      |            |      | L5002 | B-15 | C322      | D-13 | C1051 | B-12 | C5025 | B-3  | C8032 | C-13 | R314 | D-5  | R727 | C-3  | R3 |
|                    |      |                       |      | CL3020     |      |            |      | L5003 | B-15 | C323      | D-4  | C1056 | C-7  | C5026 | B-16 | C8033 | C-13 | R315 | D-13 | R728 | C-3  | R3 |
|                    |      |                       |      | CL3021     |      |            |      | L5004 | B-14 | C324      | F-5  | C1057 | C-11 | C5027 | B-15 | C8034 | C-12 | R316 | E-6  | R729 | C-3  | R3 |
|                    |      |                       |      | CL3022     |      |            |      | P4003 | B-16 | C326      | D-4  | C1058 | C-11 | C5028 | B-15 | C8035 | D-13 | R317 | D-5  | R730 | D-3  | R3 |
|                    |      |                       |      | CL3024     |      |            |      | L5005 | A-4  | C329      | E-5  | C1063 | B-7  | C5029 | B-15 | C8036 | B-13 | R318 | D-5  | R731 | D-3  | R3 |
|                    |      |                       |      | CL3025     |      |            |      | L6001 | D-11 | C         |      |       |      |       |      |       |      |      |      |      |      |    |

| MAIN C.B.A. |      |           |      |       |      |       |      |       |      |      |      |      |      |       |      |       |      |       |      |                |      |
|-------------|------|-----------|------|-------|------|-------|------|-------|------|------|------|------|------|-------|------|-------|------|-------|------|----------------|------|
| Il          |      | Capacitor |      | C347  | E-14 | C3012 | C-15 | C5041 | A-14 | R205 | F-1  | R331 | E-13 | R742  | D-15 | R3028 | C-5  | R5025 | A-14 | R6168          | E-10 |
| L203        | D-2  | C202      | D-17 | C348  | E-16 | C3015 | B-14 | C5042 | B-4  | R207 | E-17 | R332 | E-13 | R743  | D-15 | R3029 | C-4  | R6002 | C-7  | R6170          | D-11 |
| L204        | E-2  | C203      | D-17 | C350  | E-16 | C3022 | B-14 | C5043 | A-4  | R212 | E-17 | R333 | F-4  | R744  | D-15 | R3032 | C-5  | R6003 | C-10 | R6199          | D-7  |
| L206        | E-16 | C205      | E-17 | C351  | D-2  | C3023 | B-4  | C5044 | A-4  | R214 | E-17 | R334 | E-4  | R745  | D-15 | R3036 | C-5  | R6004 | C-10 | R6203          | D-6  |
| L207        | F-3  | C207      | D-16 | C352  | E-2  | C3024 | B-4  | C6001 | E-11 | R215 | E-2  | R335 | E-4  | R746  | D-15 | R3037 | D-13 | R6011 | F-6  | R6205          | E-8  |
| L209        | F-15 | C210      | E-17 | C353  | F-4  | C3027 | B-4  | C6002 | E-11 | R216 | E-17 | R336 | E-4  | R747  | C-15 | R3038 | C-6  | R6012 | F-6  | R6206          | E-9  |
| L210        | E-3  | C211      | E-17 | C360  | E-16 | C3028 | C-4  | C6003 | E-11 | R217 | E-17 | R337 | F-4  | R748  | C-15 | R3040 | C-5  | R6013 | E-12 | R6207          | D-9  |
| L211        | E-3  | C212      | F-1  | C370  | E-5  | C3030 | B-15 | C6004 | F-12 | R218 | F-17 | R338 | F-4  | R749  | C-15 | R3050 | C-5  | R6014 | E-12 | R6208          | D-10 |
| L212        | F-16 | C213      | E-17 | C371  | F-5  | C3031 | C-4  | C6005 | E-7  | R223 | E-17 | R339 | F-14 | R750  | C-15 | R3058 | C-14 | R6015 | F-12 | R6209          | D-10 |
| L215        | F-16 | C215      | E-16 | C701  | D-2  | C3032 | C-4  | C6006 | E-7  | R224 | E-2  | R340 | F-4  | R751  | D-15 | R3059 | D-15 | R6016 | F-12 | R6210          | D-10 |
| L220        | D-2  | C216      | E-16 | C702  | C-2  | C3033 | C-4  | C6007 | E-7  | R225 | F-2  | R342 | E-14 | R752  | D-1  | R3060 | D-4  | R6017 | E-12 | R6211          | D-10 |
| L221        | E-17 | C216      | E-16 | C703  | D-2  | C3034 | C-4  | C6008 | C-10 | R233 | F-3  | R343 | F-6  | R753  | D-2  | R3062 | C-4  | R6018 | E-12 | R6212          | D-10 |
| L222        | F-16 | C225      | E-16 | C710  | C-1  | C3035 | B-13 | C6011 | E-8  | R236 | F-3  | R344 | F-5  | R754  | D-1  | R3063 | D-4  | R6019 | E-12 | R6213          | D-10 |
| L230        | F-17 | C233      | E-2  | C711  | C-16 | C3037 | B-13 | C6012 | E-7  | R237 | F-3  | R345 | F-5  | R755  | D-2  | R3064 | C-4  | R6020 | E-12 | R6214          | C-10 |
| L231        | F-16 | C234      | E-16 | C716  | D-2  | C3040 | C-6  | C6013 | F-5  | R238 | F-3  | R348 | F-5  | R756  | D-1  | R3071 | B-13 | R6021 | E-11 | R6216          | E-10 |
| L301        | D-3  | C236      | F-3  | C719  | C-3  | C3041 | C-6  | C6014 | C-10 | R239 | F-15 | R349 | F-5  | R757  | D-2  | R3072 | A-13 | R6022 | E-7  | R6230          | E-8  |
| L302        | D-3  | C237      | F-15 | C720  | C-3  | C3042 | C-5  | C6015 | D-12 | R241 | F-3  | R350 | F-5  | R758  | D-2  | R3073 | C-12 | R6024 | E-9  | R6231          | C-9  |
| L303        | D-3  | C238      | F-15 | C721  | C-3  | C3043 | C-5  | C6017 | D-12 | R242 | E-3  | R351 | F-5  | R759  | D-1  | R3074 | C-12 | R6025 | E-10 | R6300          | E-6  |
| L304        | D-15 | C239      | F-3  | C722  | C-3  | C4001 | B-17 | C6018 | D-12 | R243 | F-3  | R352 | F-5  | R760  | C-16 | R3081 | B-13 | R6026 | E-12 | R6301          | E-6  |
| L305        | E-15 | C240      | F-15 | C724  | D-15 | C4002 | A-17 | C6022 | F-6  | R244 | F-3  | R353 | D-6  | R761  | C-3  | R3082 | B-13 | R6027 | F-12 | R6302          | E-7  |
| L306        | D-3  | C241      | E-16 | C725  | D-15 | C4003 | B-16 | C6023 | E-6  | R245 | E-3  | R354 | E-12 | R763  | C-3  | R3086 | B-13 | R6028 | F-12 | R6303          | E-7  |
| L307        | E-3  | C242      | E-16 | C729  | D-16 | C4004 | A-16 | C6024 | E-10 | R246 | E-3  | R355 | D-2  | R764  | D-16 | R4001 | B-17 | R6029 | D-12 | R6304          | E-6  |
| L308        | D-14 | C243      | D-2  | C730  | D-2  | C4005 | A-1  | C6025 | E-2  | R247 | E-3  | R356 | E-2  | R765  | B-1  | R4002 | B-17 | R6031 | D-12 | R6305          | F-7  |
| L309        | D-14 | C244      | E-16 | C731  | C-16 | C4006 | B-17 | C6027 | D-7  | R249 | E-3  | R357 | E-16 | R767  | B-2  | R4003 | B-17 | R6032 | D-12 | R6309          | D-7  |
| L310        | D-3  | C245      | F-3  | C732  | D-16 | C4007 | B-1  | C6030 | E-11 | R250 | E-3  | R358 | E-16 | R1001 | B-12 | R4004 | A-1  | R6033 | D-12 | R6310          | E-12 |
| L311        | E-6  | C246      | E-16 | C737  | D-16 | C4008 | A-5  | C6031 | D-7  | R251 | E-3  | R359 | D-2  | R1002 | B-11 | R4005 | B-17 | R6034 | E-6  | R6311          | E-11 |
| L312        | E-6  | C247      | D-16 | C738  | B-1  | C4009 | B-16 | C6040 | D-12 | R252 | E-3  | R360 | D-14 | R1003 | C-12 | R4006 | B-17 | R6035 | D-8  | R6001          | C-5  |
| L313        | D-13 | C249      | E-3  | C739  | B-2  | C4010 | A-2  | C6060 | D-11 | R253 | D-16 | R361 | D-4  | R1004 | C-12 | R4007 | B-17 | R6039 | C-8  | R6002          | B-14 |
| L314        | D-15 | C250      | E-3  | C779  | C-16 | C4011 | B-2  | C6100 | D-7  | R255 | E-3  | R371 | D-13 | R1005 | A-11 | R4008 | B-2  | R6040 | F-7  | R6003          | C-5  |
| L315        | E-4  | C251      | D-15 | C1001 | B-10 | C4012 | A-2  | C6201 | E-8  | R256 | F-3  | R374 | F-5  | R1006 | A-11 | R4009 | B-2  | R6041 | F-7  | R6004          | C-5  |
| L316        | F-4  | C252      | E-3  | C1002 | B-7  | C4013 | B-16 | C6203 | D-8  | R257 | F-15 | R375 | F-6  | R1007 | A-11 | R4010 | B-16 | R6042 | C-10 | R6005          | C-5  |
| L317        | E-13 | C253      | E-3  | C1003 | B-7  | C4014 | B-16 | C6204 | D-10 | R258 | E-3  | R376 | F-5  | R1008 | B-11 | R4011 | B-16 | R6043 | C-8  | R6007          | B-14 |
| L318        | D-3  | C254      | E-3  | C1004 | B-12 | C4015 | B-16 | C6205 | E-9  | R260 | E-3  | R377 | D-9  | R1009 | B-11 | R4012 | B-16 | R6044 | C-9  | R6010          | B-4  |
| L319        | F-4  | C255      | E-3  | C1005 | B-12 | C4016 | A-16 | C6206 | E-9  | R263 | E-17 | R378 | F-12 | R1010 | C-11 | R4013 | B-16 | R6045 | C-10 | R6011          | B-15 |
| L321        | D-3  | C256      | E-3  | C1006 | B-12 | C4017 | A-16 | C6207 | D-8  | R264 | D-2  | R379 | F-13 | R1012 | B-12 | R4014 | B-16 | R6048 | E-8  | R6012          | B-15 |
| L325        | E-5  | C257      | E-16 | C1007 | B-8  | C4018 | A-2  | C6208 | D-8  | R265 | F-2  | R380 | F-13 | R1013 | B-12 | R4015 | B-16 | R6049 | E-8  | R6013          | B-15 |
| L701        | D-2  | C258      | E-3  | C1008 | A-7  | C4019 | A-16 | C6209 | D-8  | R266 | F-2  | R381 | F-5  | R1014 | B-12 | R4016 | A-16 | R6050 | F-7  | R6014          | B-15 |
| L703        | D-16 | C262      | D-16 | C1009 | A-11 | C4020 | C-1  | C6210 | C-10 | R268 | D-17 | R382 | F-4  | R1015 | B-12 | R4017 | B-16 | R6051 | E-8  | R6015          | B-15 |
| L706        | C-16 | C265      | E-17 | C1010 | A-11 | C4021 | C-17 | C6211 | D-10 | R269 | E-17 | R383 | F-14 | R1016 | B-12 | R4018 | A-16 | R6052 | E-8  | R6016          | B-15 |
| L707        | C-16 | C266      | E-17 | C1011 | A-12 | C4022 | C-1  | C6213 | C-8  | R270 | E-17 | R385 | E-4  | R1017 | B-12 | R4019 | A-16 | R6053 | E-8  | R6017          | B-3  |
| L1001       | A-8  | C267      | F-16 | C1012 | A-11 | C4023 | C-17 | C6214 | D-10 | R272 | E-17 | R386 | D-14 | R1018 | B-12 | R4020 | A-16 | R6054 | E-8  | R6018          | B-4  |
| L1002       | B-7  | C269      | F-16 | C1013 | B-7  | C4024 | C-17 | C6221 | D-8  | R273 | E-17 | R390 | F-5  | R1019 | B-12 | R4021 | C-16 | R6055 | E-12 | R6020          | B-15 |
| L1003       | C-7  | C270      | F-17 | C1014 | B-11 | C4025 | C-2  | C6230 | D-8  | R274 | F-2  | R391 | F-5  | R1020 | B-12 | R4022 | B-16 | R6056 | F-7  | R6021          | B-16 |
| L1006       | B-11 | C271      | E-2  | C1015 | C-7  | C4026 | C-2  | C6231 | E-9  | R275 | F-16 | R392 | F-5  | R1021 | B-11 | R4023 | C-16 | R6060 | C-11 | R6026          | B-6  |
| L1007       | A-8  | C272      | F-17 | C1017 | B-11 | C4033 | B-17 | C8001 | C-5  | R285 | F-17 | R701 | D-2  | R1022 | A-11 | R4024 | C-16 | R6061 | E-8  | R6027          | B-6  |
| L1008       | A-7  | C273      | F-17 | C1019 | B-11 | C4034 | B-17 | C8002 | C-5  | R286 | F-17 | R702 | C-2  | R1023 | A-11 | R4025 | A-16 | R6063 | E-10 | R6028          | B-6  |
| L1009       | B-11 | C274      | F-16 | C1020 | B-11 | C4035 | A-17 | C8003 | C-5  | R287 | F-17 | R703 | C-1  | R1024 | A-12 | R4026 | A-17 | R6066 | E-10 | R6029          | B-6  |
| L1010       | B-11 | C275      | F-16 | C1022 | A-11 | C4036 | A-17 | C8004 | C-5  | R288 | F-17 | R704 | C-2  | R1025 | B-12 | R4027 | A-17 | R6070 | D-6  | R6030          | C-6  |
| L1011       | A-11 | C276      | F-17 | C1024 | B-12 | C4037 | A-17 | C8005 | C-5  | R290 | C-5  | R705 | C-2  | R1026 | D-11 | R4028 | A-16 | R6071 | D-7  | R6031          | C-6  |
| L1012       | B-11 | C301      | D-3  | C1025 | B-12 | C4038 | B-2  | C8007 | B-13 | R291 | F-16 | R708 | C-1  | R1027 | C-12 | R4029 | A-16 | R6073 | D-6  | R6032          | C-5  |
| L1014       | B-11 | C302      | D-15 | C1026 | B-6  | C4040 | B-17 | C8008 | B-6  | R292 | F-16 | R709 | C-1  | R1033 | B-10 | R4030 | C-1  | R6074 | D-7  | R6033          | C-6  |
| L1015       | B-11 | C303      | D-15 | C1027 | B-6  | C5001 | B-15 | C8010 | B-15 | R293 | F-16 | R710 | C-2  | R1035 | B-11 | R4031 | C-1  | R6075 | D-7  | R6034          | C-5  |
| L1062       | C-8  | C304      | D-3  | C1028 | B-6  | C5002 | B-15 | C8011 | B-16 | R295 | D-2  | R711 | D-2  | R1038 | B-12 | R4032 | C-17 | R6076 | E-6  | R6037          | D-13 |
| L3001       | B-13 | C305      | D-15 | C1029 | B-12 | C5003 | B-16 | C8012 | B-16 | R296 | E-17 | R712 | C-2  | R1039 | A-11 | R4033 | C-17 | R6078 | D-7  | R6040          | C-13 |
| L3002       | B-13 | C306      | E-15 | C1030 | B-12 | C5004 | B-16 | C8013 | B-15 | R297 | E-17 | R713 | D-2  | R1040 | B-11 | R4034 | C-2  | R6080 | D-8  | R6041          | C-13 |
| L3003       | B-14 | C307      | E-4  | C1031 | B-12 | C5005 | B-15 | C8014 | B-15 | R298 | E-15 | R714 | D-2  | R1051 | B-12 | R4035 | B-2  | R6090 | D-7  | R6046          | C-14 |
| L3005       | B-15 | C308      | E-4  | C1032 | B-12 | C5006 | B-15 | C8015 | B-15 | R299 | E-15 | R715 | D-2  | R1052 | B-12 | R4036 | C-2  | R6091 | D-7  | R6047          | D-12 |
| L3006       | B-15 | C310      | D-14 | C1033 | B-12 | C5007 | B-15 | C8020 | C-6  | R301 | D-3  | R716 | C-3  | R1062 | C-8  | R4037 | C-16 | R6108 | C-10 | R6048          | C-12 |
| L3011       | B-14 | C312      | E-5  | C1034 | B-11 | C5008 | B-15 | C8021 | C-6  | R302 | E-4  | R717 | D-3  | R1063 | C-10 | R4038 | C-17 | R6111 | D-8  | R6049          | C-13 |
| L3012       | C-14 | C313      | E-5  | C1035 | A-11 | C5009 | B-4  | C8022 | C-6  | R303 | E-4  | R718 | C-3  | R1065 | B-11 | R4047 | B-2  | R6112 | D-8  | R6050          | B-13 |
| L3013       | C-4  | C314      | E-6  | C1036 | A-12 | C5011 | B-3  | C8023 | C-6  | R304 | E-5  | R720 | C-3  | R1071 | B-12 | R4049 | B-17 | R6113 | D-12 | R6051          | B-13 |
| L3014       | B-4  | C315      | D-5  | C1037 | A-12 | C5013 | B-3  | C8024 | C-6  | R305 | E-13 | R721 | C-3  | R1072 | B-11 | R4050 | B-17 | R6130 | E-7  | R6052          | C-14 |
| L3015       | C-6  | C316      | D-5  | C1040 | B-10 | C5014 | B-3  | C8025 | C-6  | R307 | E-6  | R722 | C-3  | R1073 | B-11 | R4051 | A-17 | R6131 | C-8  | R6053          | C-14 |
| L3016       | C-5  | C317      | D-13 | C1041 | C-10 | C5021 | B-15 | C8026 | D-5  | R310 | D-13 | R723 | C-2  | R3001 | A-13 | R4052 | A-17 | R6134 | E-6  | R6054          | C-14 |
| L3021       | C-15 | C318      | D-5  | C1042 | C-11 | C5022 | B-4  | C8027 | C-5  | R311 | D-5  | R724 | D-3  | R3002 | B-13 | R4053 | A-17 | R6135 | D-6  | Resistor Array |      |
| L3022       | C-4  | C319      | D-5  | C1043 | B-12 | C5023 | B-3  | C8030 | C-12 | R312 | D-5  | R725 | D-15 | R3005 | B-13 | R4054 | A-17 | R6136 | D-7  |                |      |
| L4001       | B-1  | C320      |      |       |      |       |      |       |      |      |      |      |      |       |      |       |      |       |      |                |      |

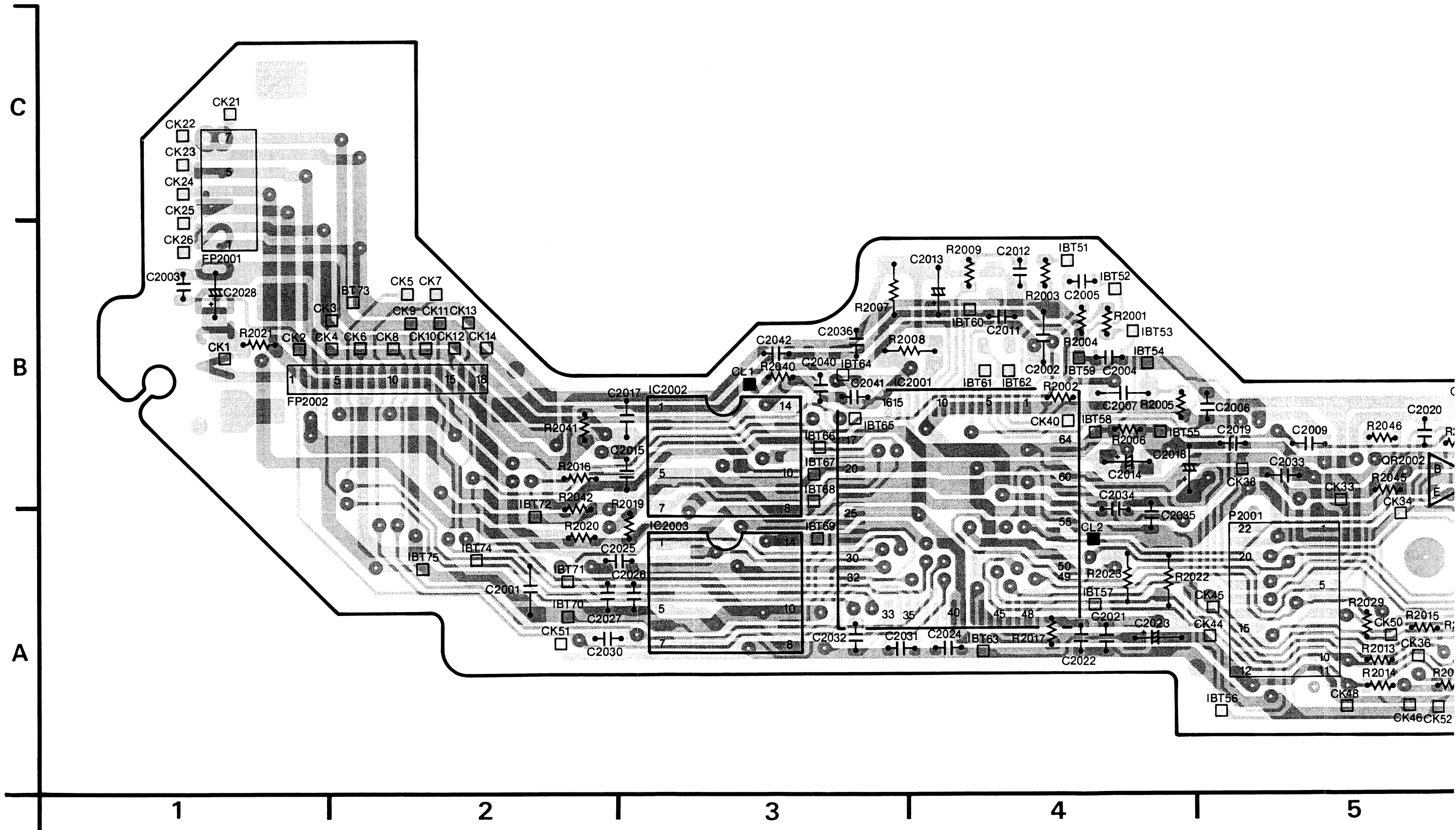




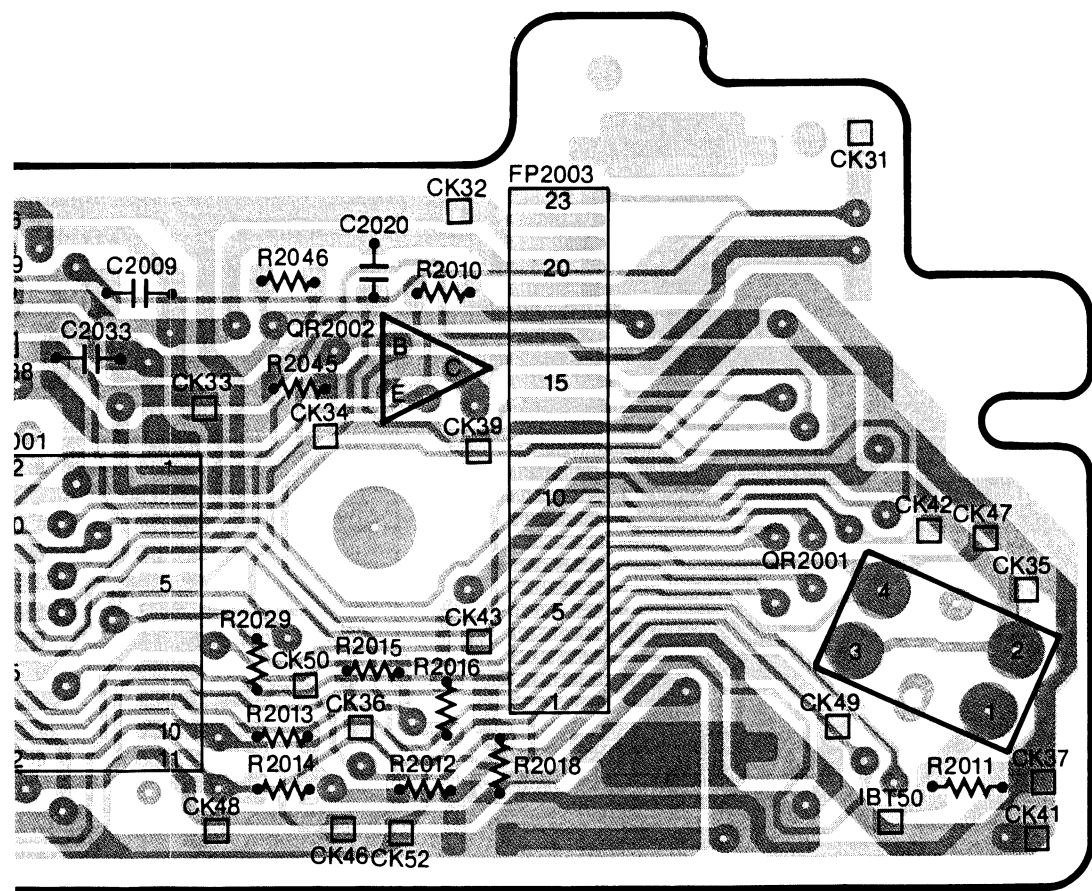




### 3-22. DRIVE C.B.A. (VEP02418A)





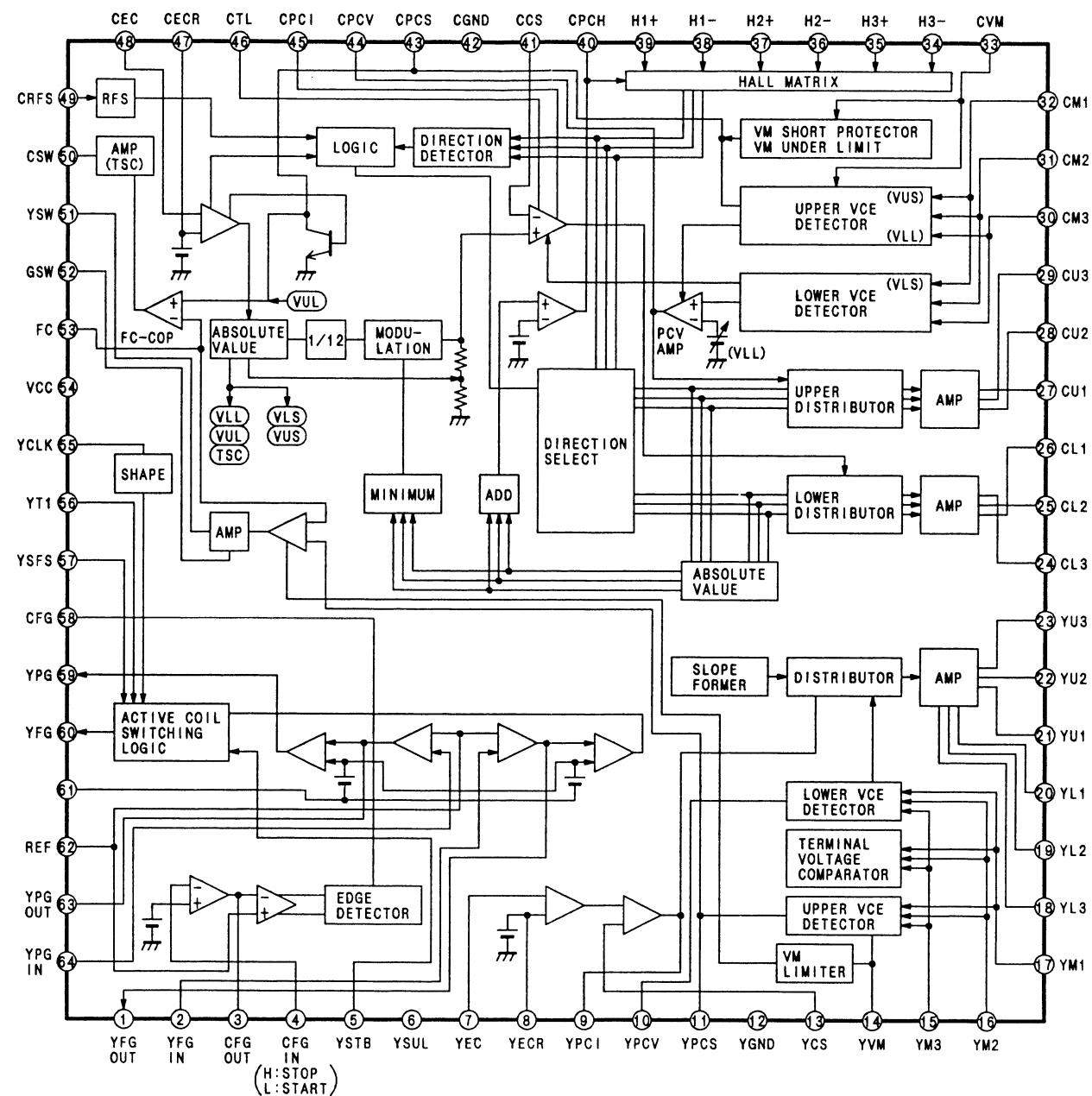


| DRIVE C.B.A.          |     |
|-----------------------|-----|
| Transistor & Resistor |     |
| QR2001                | A-6 |
| QR2002                | B-5 |
| Integrated Circuit    |     |
| IC2001                | B-4 |
| IC2002                | B-3 |
| IC2003                | A-3 |
| Connector             |     |
| FP2001                | B-1 |
| FP2002                | B-1 |
| FP2003                | B-6 |
| P2001                 | A-5 |

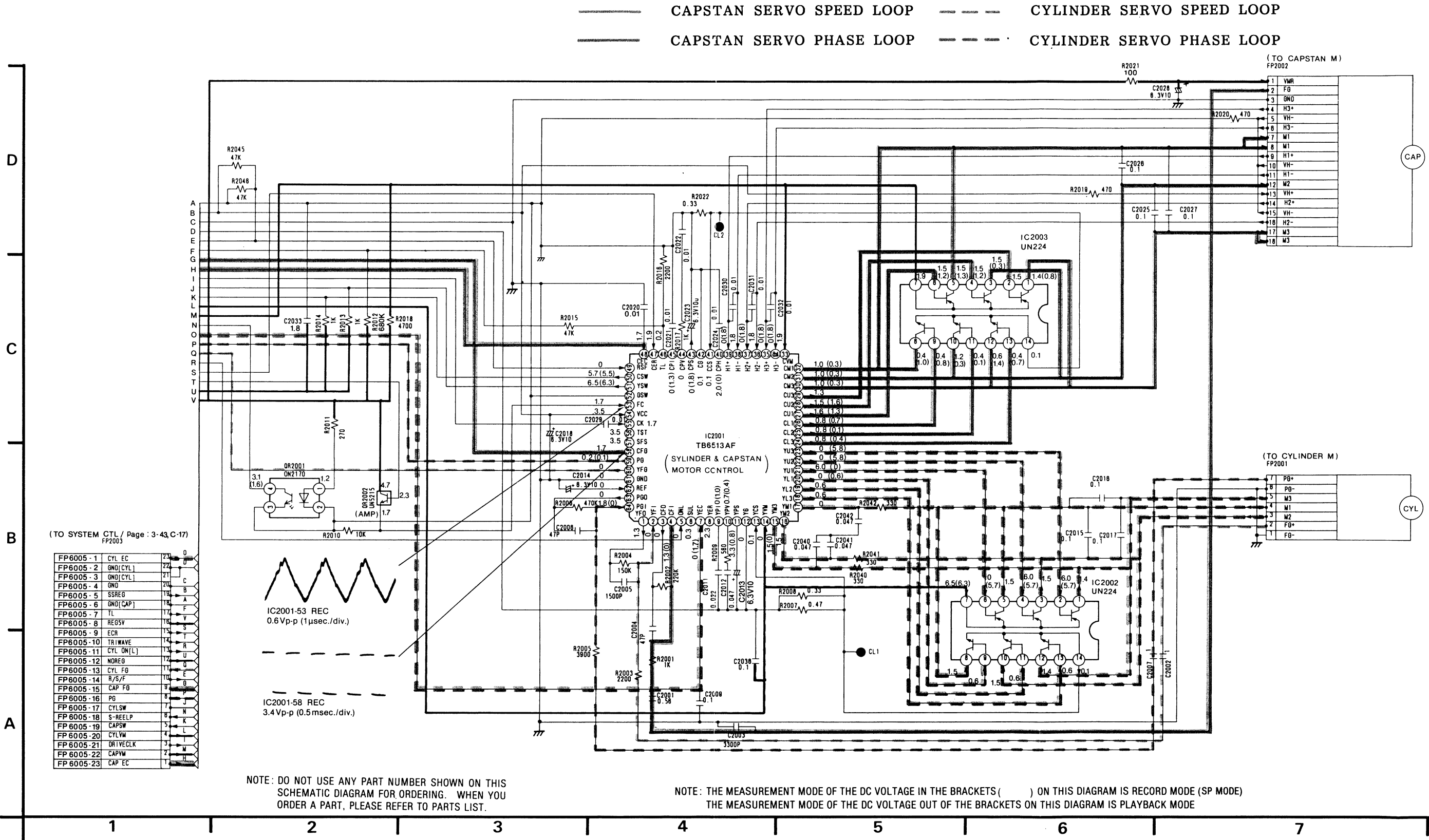
ADDRESS INFORMATION

## IC BLOCK

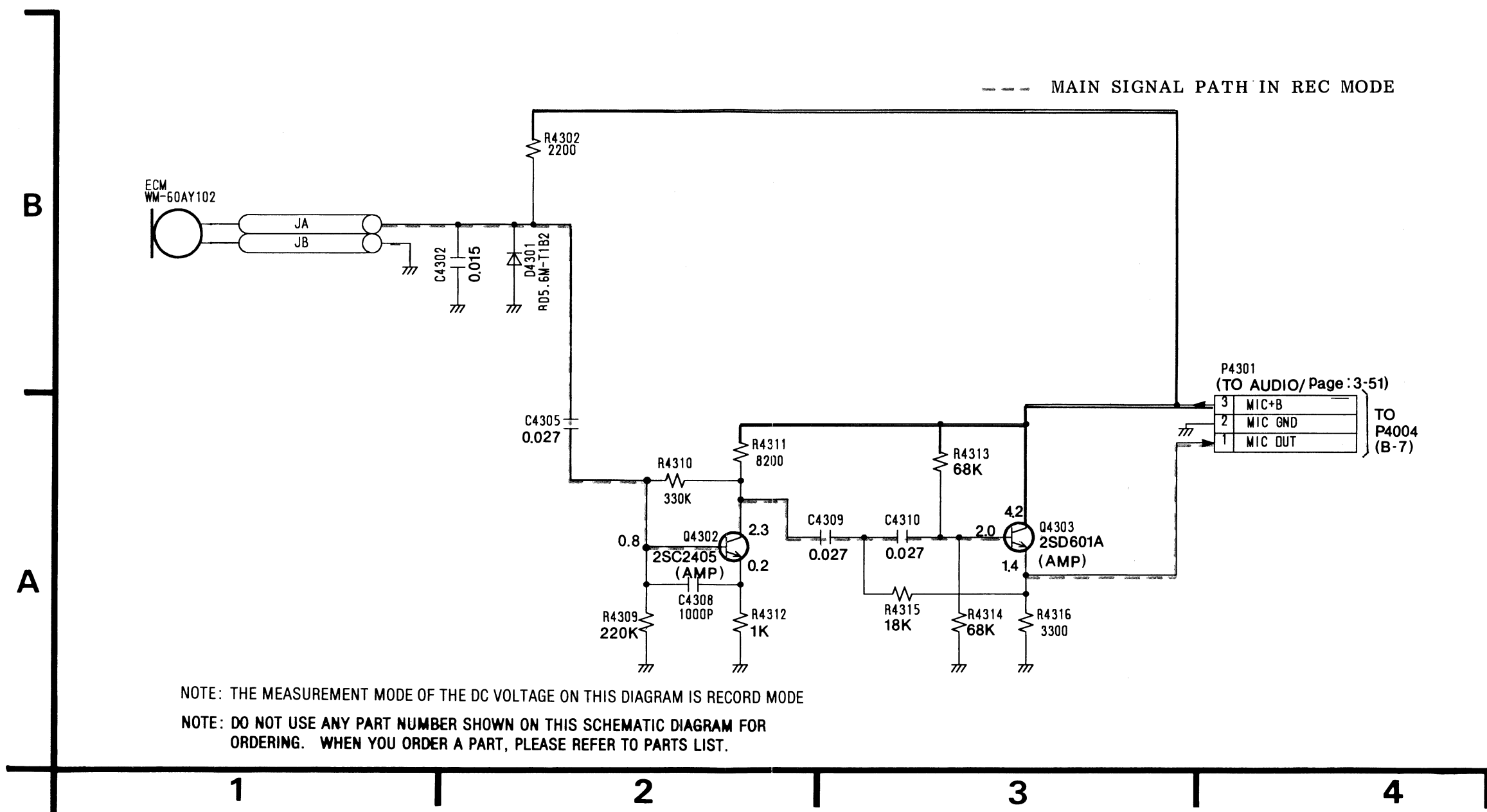
IC2001 (TB6513AF)



3-23. DRIVE SCHEMATIC DIAGRAM

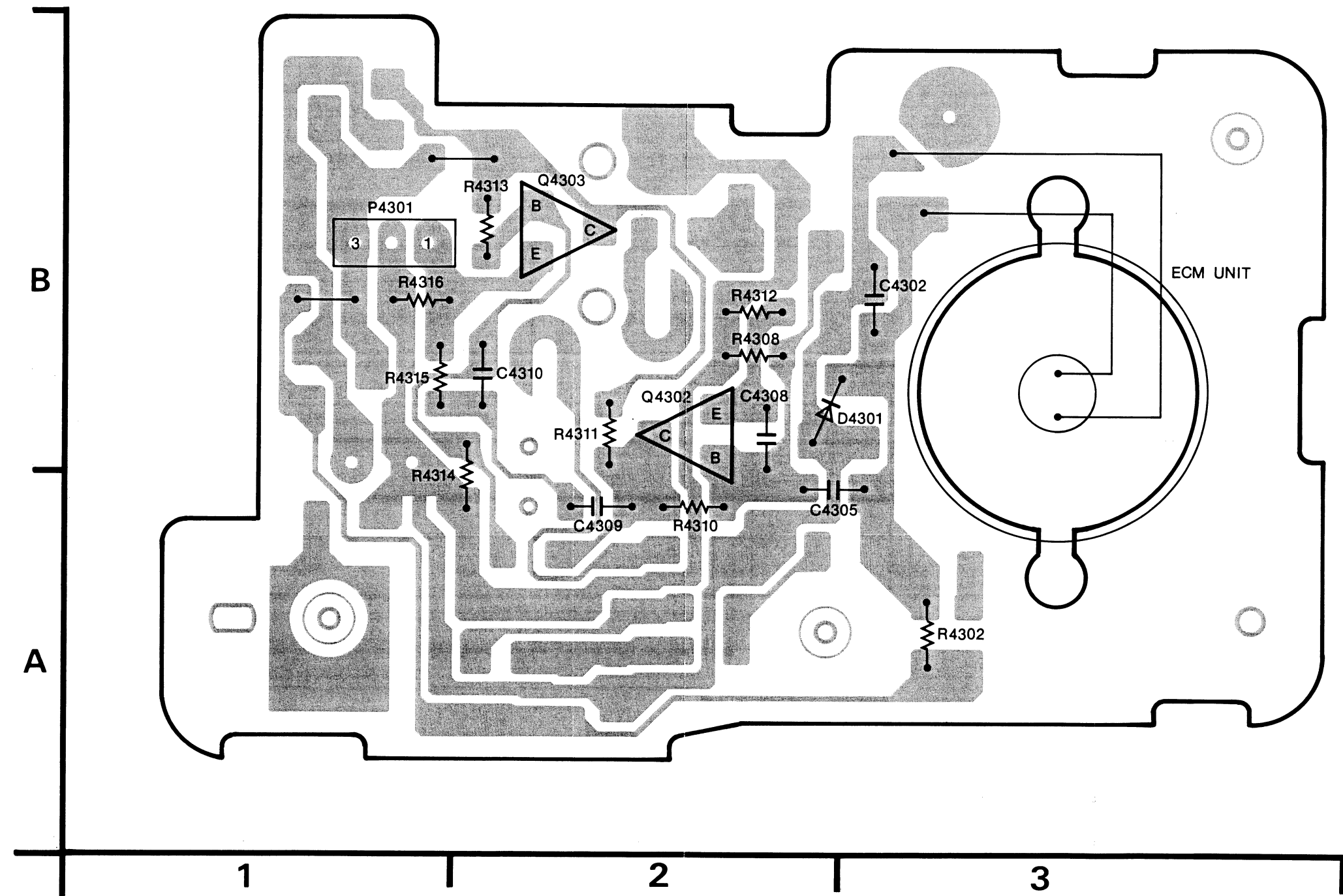


### 3-24. MIC SCHEMATIC DIAGRAM

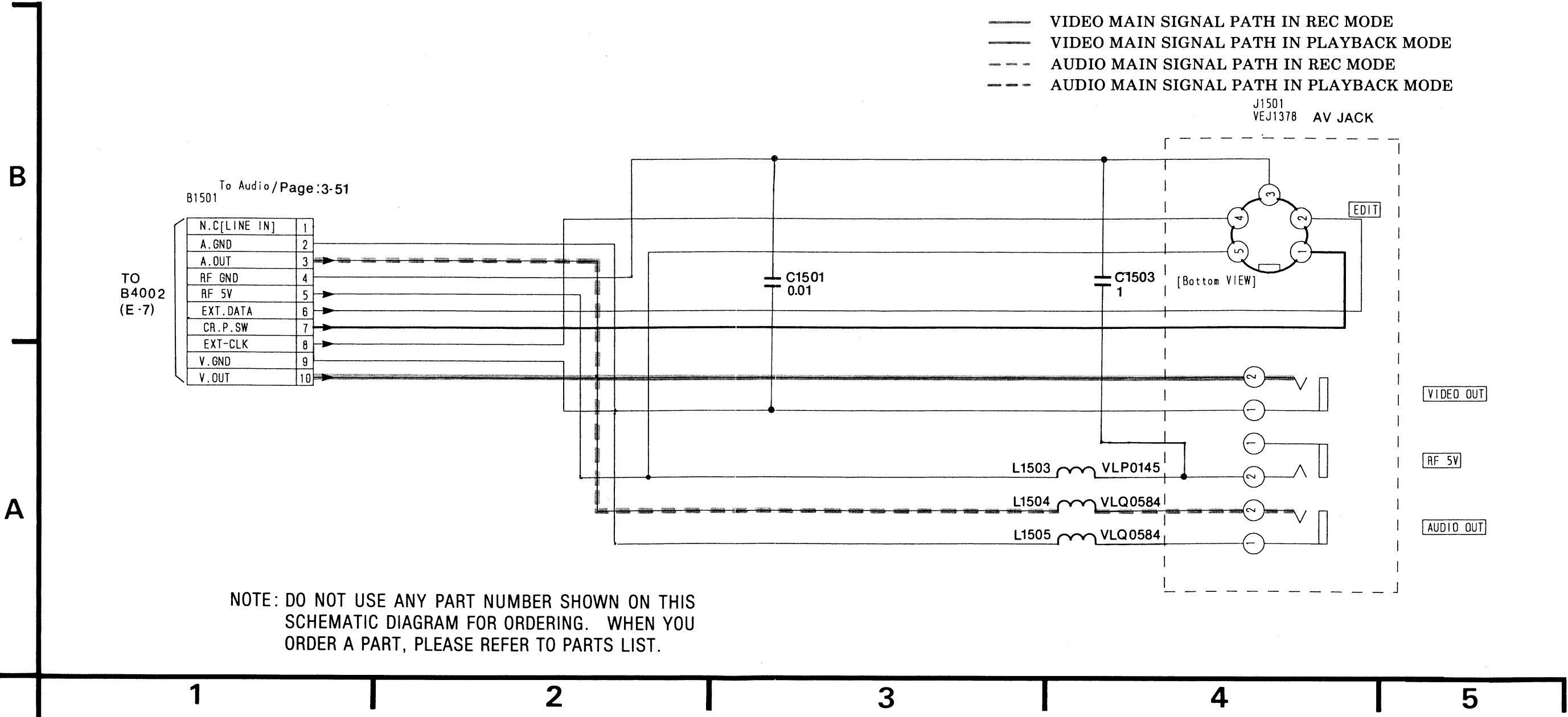




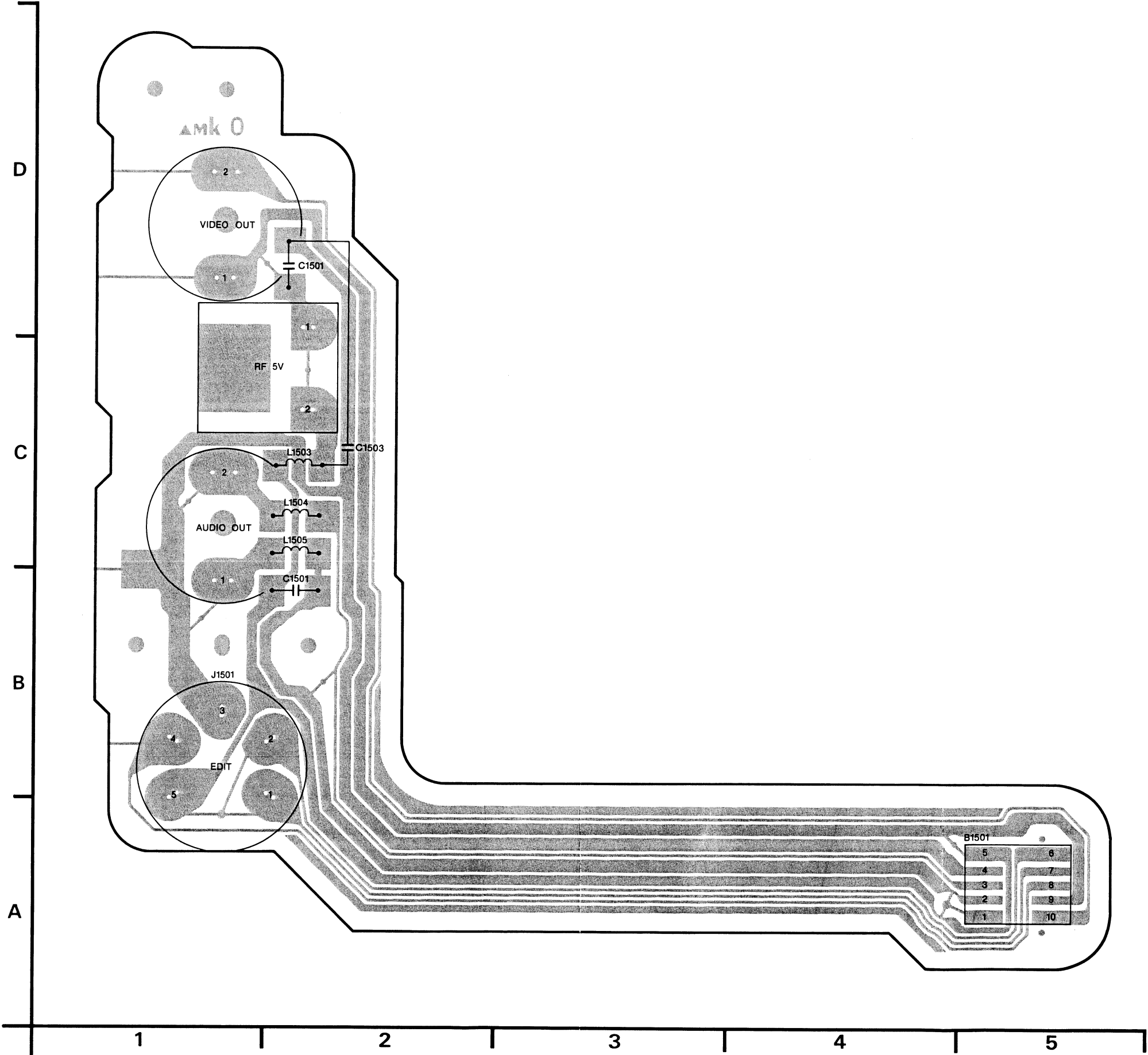
3-25. MIC UNIT (VEK6635)



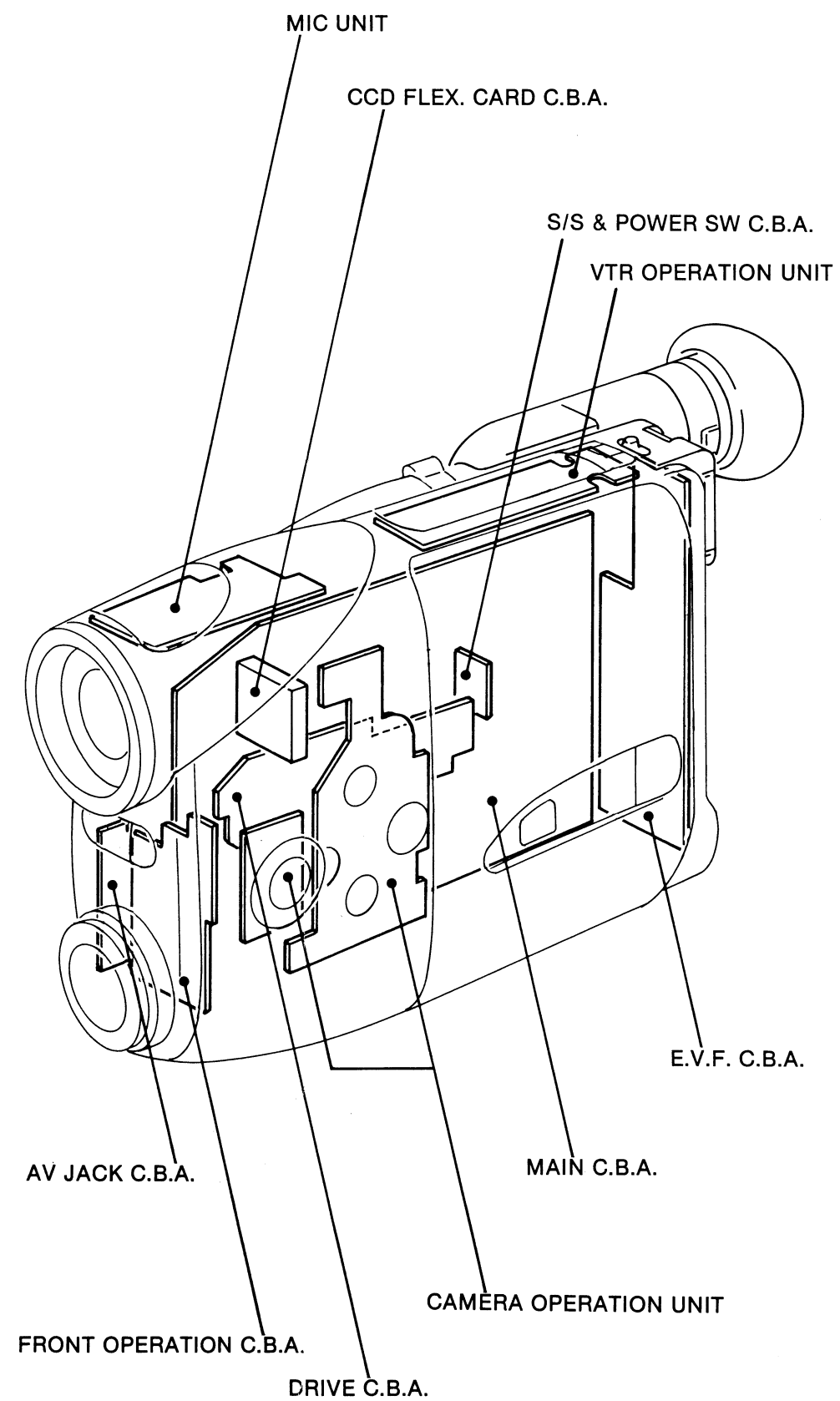
3-26. AV JACK SCHEMATIC DIAGRAM



3-27. AV JACK C.B.A. (VEP04457A)



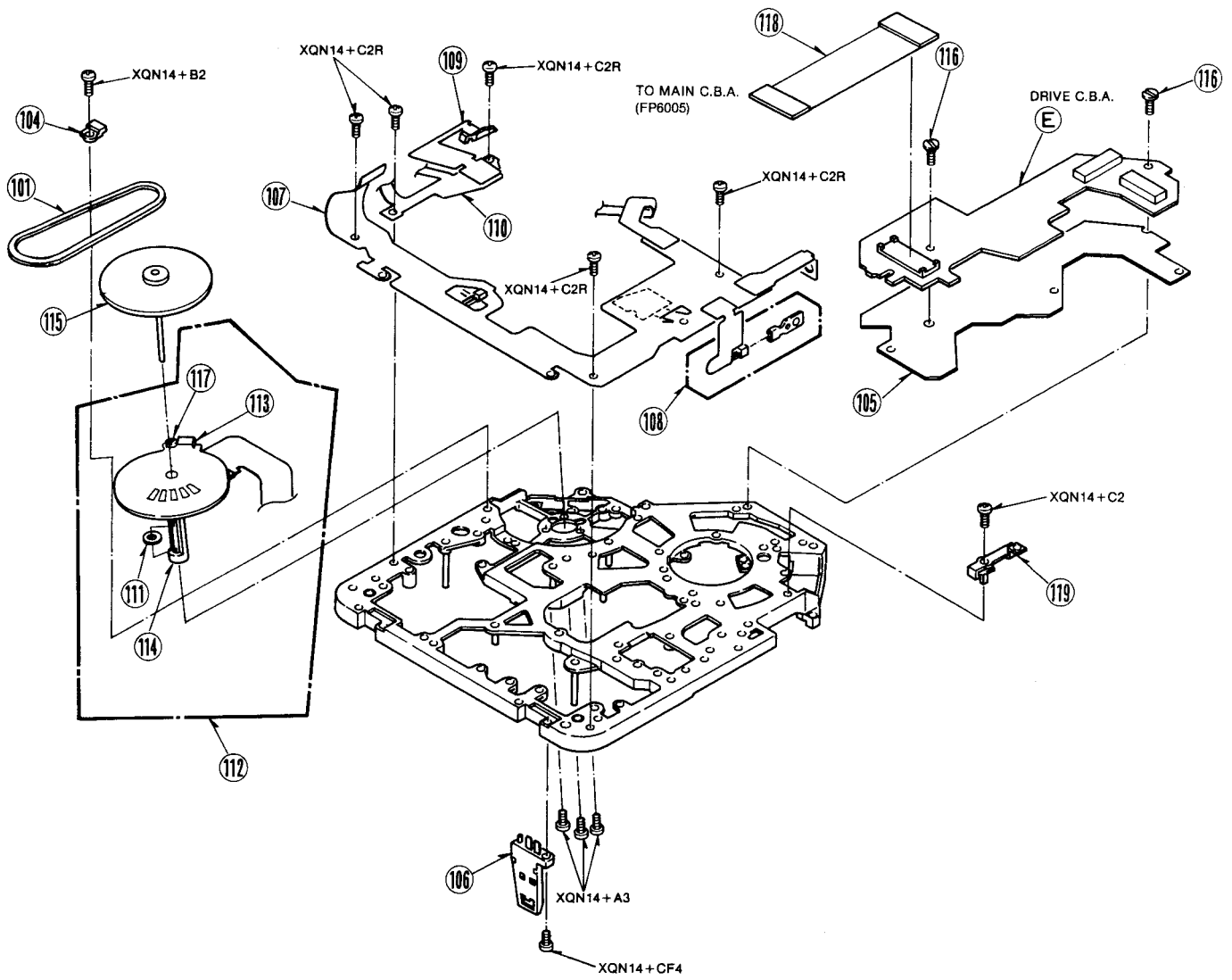
### 3-28. CIRCUIT BOARD LAYOUT



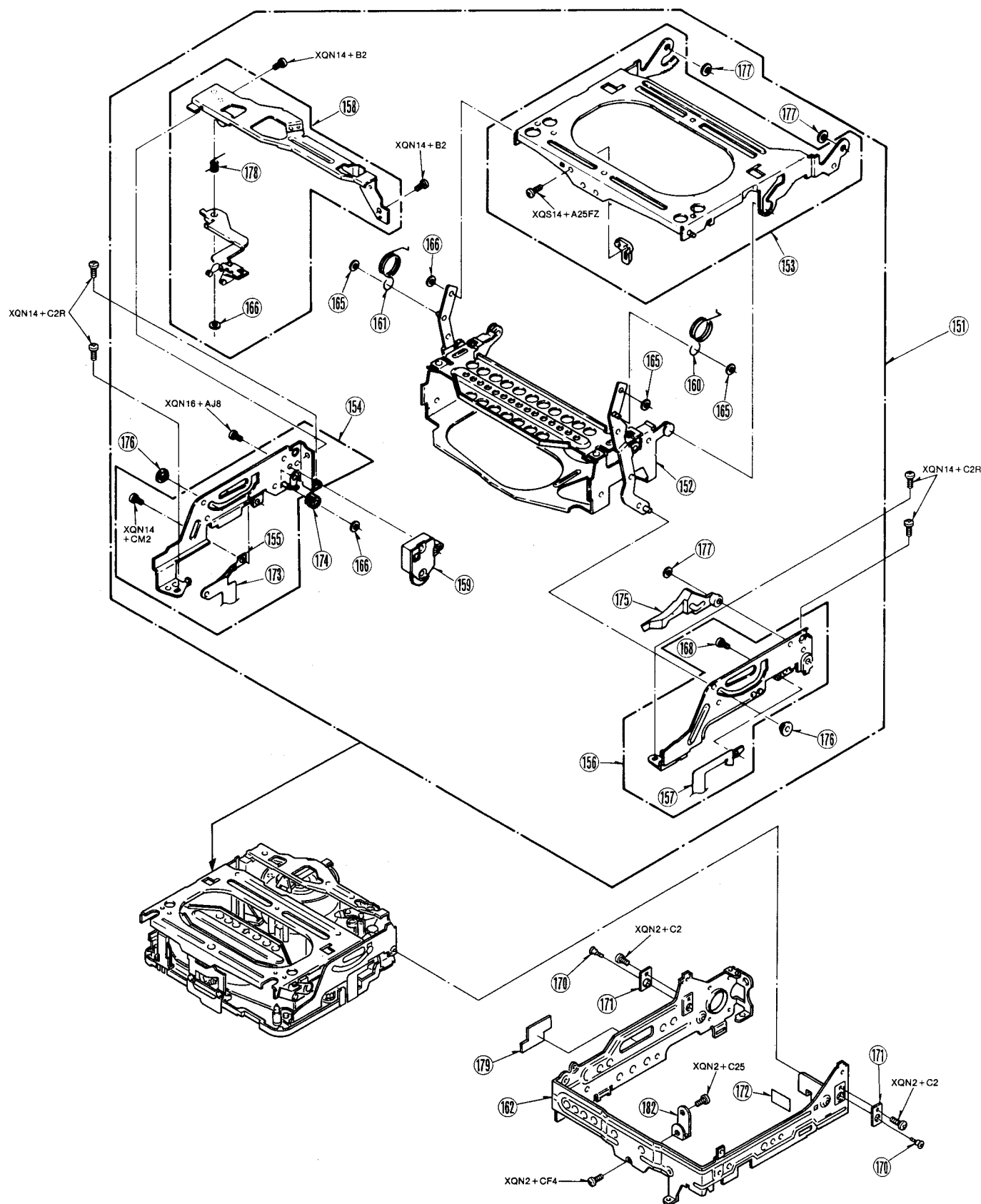
## ① VTR MECHANISM SECTION (1)



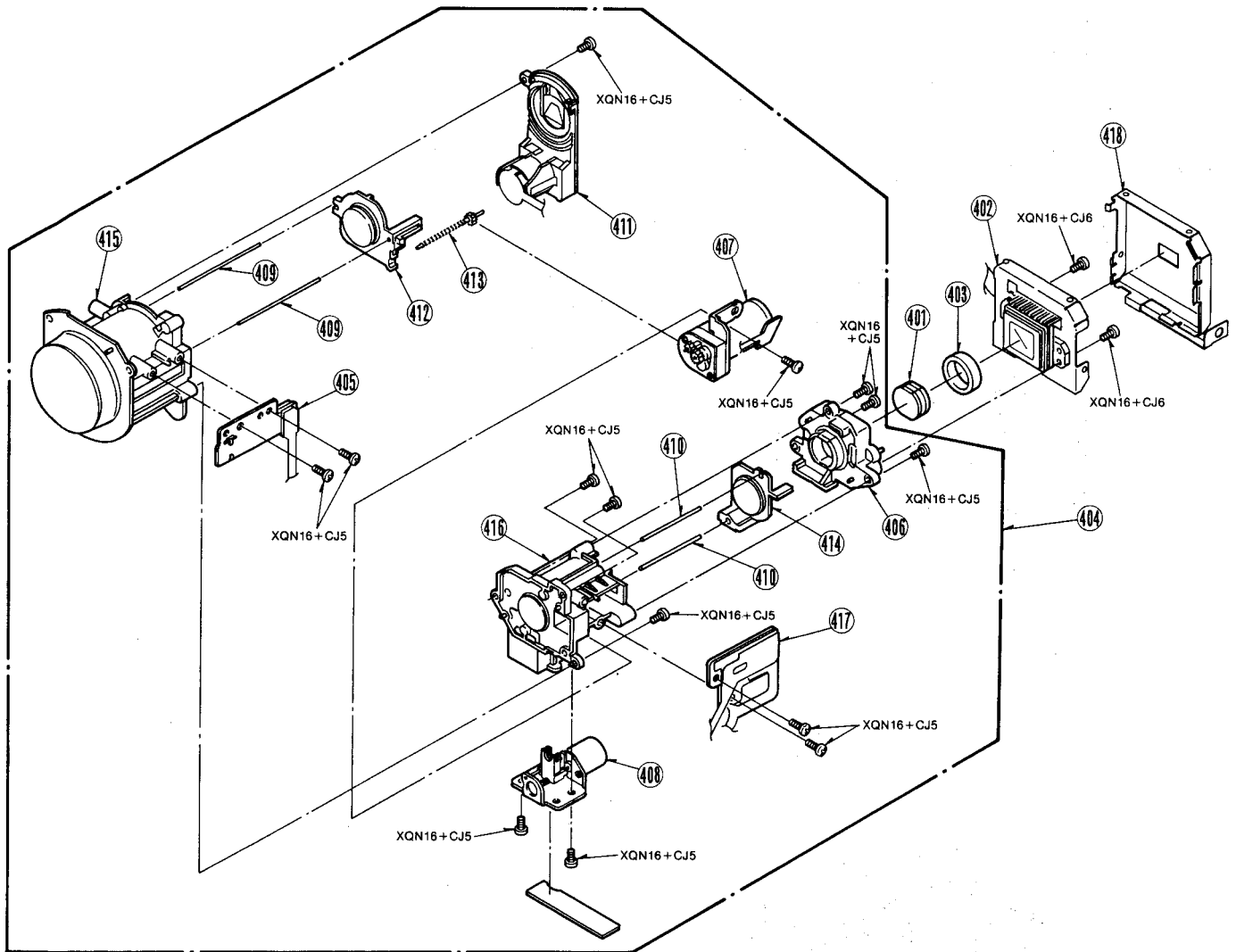
## ② VTR MECHANISM SECTION (2)



### ③ VTR MECHANISM SECTION (3)



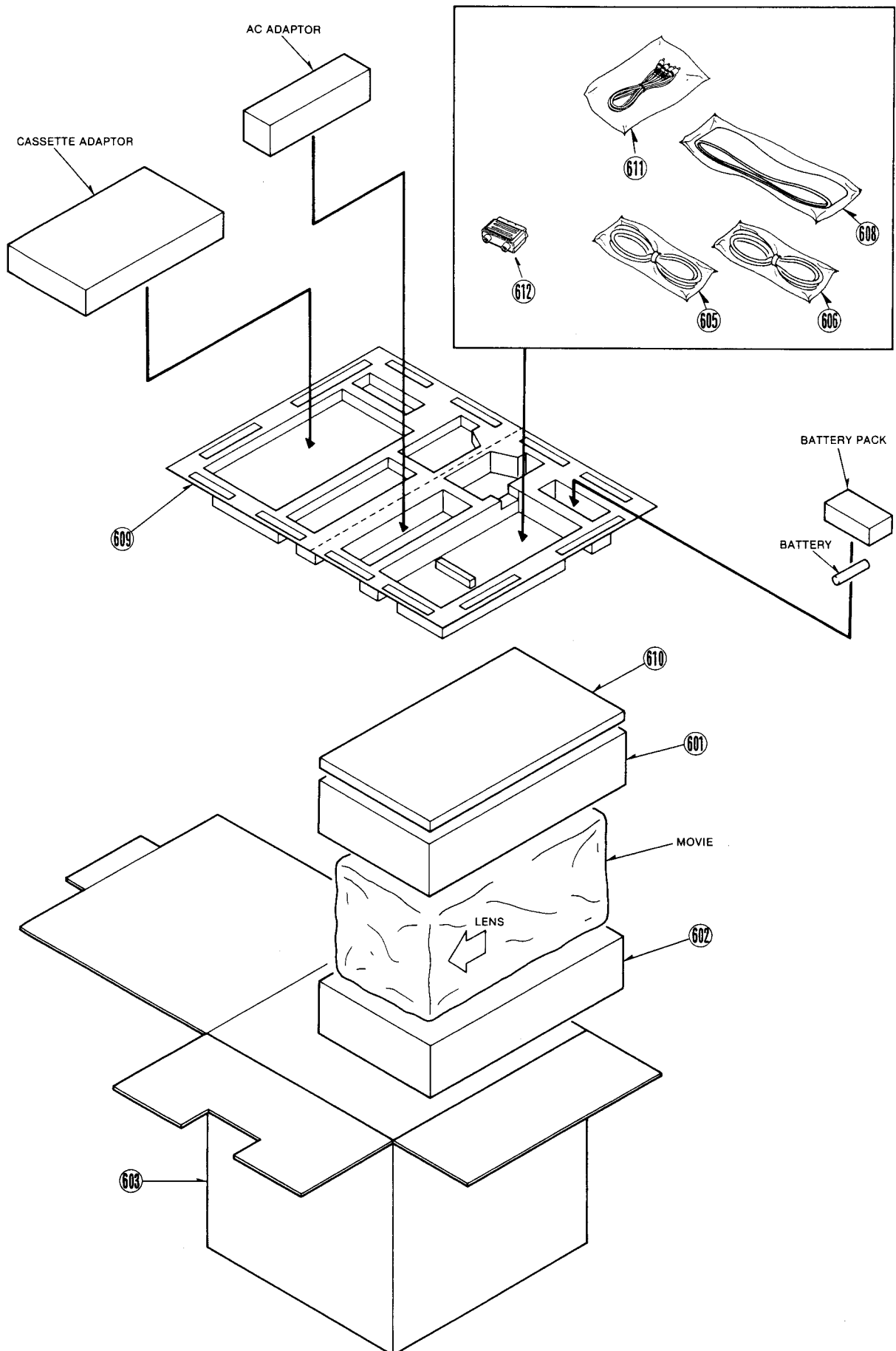
#### ④ CAMERA LENS SECTION





[illegible]

## ⑥ PACKING PARTS & ACCESSORIES SECTION



# REPLACEMENT PARTSLIST M621

## MECHANISM SECTION

|        |                |                       |
|--------|----------------|-----------------------|
| 1(1)   | 4822 466 82928 | REEL BASE (S)         |
| 2(1)   | 4822 522 33259 | BRAKE GEAR (A)        |
| 3(1)   | 4822 522 33261 | BRAKE GEAR (B)        |
| 4(1)   | 4822 522 33262 | BRAKE GEAR (C)        |
| 5(1)   | 4822 361 21533 | LOADING MOTOR (1) U.  |
| 6(1)   | 4822 256 91926 | MOTOR HOLDER U.       |
| 7(1)   | 4822 214 33857 | RT CONNECTOR U.       |
| 8(1)   | 4822 403 70614 | T-RING SLIDER         |
| 9(1)   | 4822 403 70769 | TEN-REG.SPRING HOOK   |
| 10(1)  | 4822 403 70615 | PENDULUM ARM HOLDER   |
| 11(1)  | 4822 492 52316 | T3 ARM SPRING         |
| 12(1)  | 4822 492 52317 | AC HEAD SPRING        |
| 13(1)  | 4822 691 20754 | S-BOAT GUIDE          |
| 14(1)  | 4822 403 70616 | T-BOAT GUIDE          |
| 15(1)  | 4822 522 33422 | MODE SWITCH U.        |
| 16(1)  | 4822 417 50285 | LOCK BASE U.          |
| 17(1)  | 4822 532 12204 | LOADING RING UNIT     |
| 18(1)  | 4822 532 12172 | RING GUIDE            |
| 19(1)  | 4822 532 12173 | T-RING UNIT           |
| 20(1)  | 4822 532 12174 | S-RING UNIT           |
| 21(1)  | 4822 130 83052 | LED UNIT              |
| 22(1)  | 4822 462 30556 | T-RAIL UNIT           |
| 23(1)  | 4822 403 70632 | T-BOAT UNIT           |
| 24(1)  | 4822 403 70626 | T4 POST UNIT          |
| 25(1)  | 4822 403 71028 | T-REEL SENSOR UNIT    |
| 26(1)  | 4822 403 70628 | S-RAIL U.             |
| 27(1)  | 4822 403 70776 | S-BOAT U.             |
| 28(1)  | 4822 249 10505 | AC HEAD U.            |
| 29(1)  | 4822 403 70633 | EJECT LEVER U.        |
| 30(1)  | 4822 403 70634 | SWINGARM U.           |
| 31(1)  | 4822 403 70635 | T3 ARM U.             |
| 32(1)  | 4822 403 71029 | PINCH ARM U.          |
| 33(1)  | 4822 403 70637 | PINCH DRIVE ARM U.    |
| 34(1)  | 4822 492 33357 | PINCH PRESSURE SPRING |
| 35(1)  | 4822 403 70638 | PAD ARM U.            |
| 36(1)  | 4822 403 70639 | TEN-REG. ARM U.       |
| 37(1)  | 4822 492 33358 | TEN-REG. SPRING       |
| 38(1)  | 4822 528 81474 | IDLER U.              |
| 39(1)  | 4822 522 33265 | RELAY GEAR U.         |
| 40(1)  | 4822 522 33266 | T-DRIVE GEAR U.       |
| 41(1)  | 4822 691 20915 | CYLINDER U.           |
| 42(1)  | 4822 532 12202 | WASHER                |
| 43(1)  | 4822 532 12201 | WASHER                |
| 44(1)  | 4822 502 21258 | SCREW                 |
| 46(1)  | 4822 532 12201 | WASHER                |
| 47(1)  | 4822 505 10776 | NUT                   |
| 48(1)  | 4822 505 11138 | ADJUST NUT            |
| 49(1)  | 4822 505 11152 | T3 POST NUT           |
| 50(1)  | 4822 502 21262 | SCREW                 |
| 51(1)  | 4822 492 42638 | LOCK SPRING           |
| 52(1)  | 4822 492 71502 | EARTH BRUSH U.        |
| 53(1)  | 4822 532 12202 | WASHER                |
| 54(1)  | 4822 532 12203 | WASHER                |
| 55(1)  | 4822 502 21474 | SCREW                 |
| 56(1)  | 4822 502 21473 | SCREW                 |
| 57(1)  | 4822 532 12201 | WASHER                |
| 58(1)  | 4822 492 71501 | S-GUIDE UNIT          |
| 101(2) | 4822 358 31189 | CAPSTAN BELT          |
| 104(2) | 4822 462 71883 | CAPSTAN STOPPER       |
| 105(2) | 4822 466 82971 | BARRIER               |
| 106(2) | 4822 276 30414 | REC SAFETY SW U.      |
| 107(2) | 4822 320 50331 | MECH. FLEXIBLE CARD   |
| 108(2) | 4822 130 83053 | PHOTO (L) U.          |
| 109(2) | 4822 130 83054 | PHOTO (R) U.          |
| 110(2) | 4822 403 71028 | T-REEL SENSOR U.      |
| 111(2) | 4822 520 30544 | LOWER BEARING         |
| 112(2) | 4822 362 10269 | STATOR U.             |
| 113(2) | 4822 691 20751 | MR HEAD               |
| 114(2) | 4822 520 10745 | HOUSING U.            |
| 115(2) | 4822 362 20237 | ROTOR U.              |
| 116(2) | 4822 502 21257 | SCREW                 |
| 117(2) | 4822 502 13715 | SCREW                 |
| 118(2) | 4822 403 71027 | DRIVE FLEX CARD       |
| 151(3) | 4822 691 20921 | GARAGE U.             |
| 152(3) | 4822 403 70622 | HOLDER U.             |

|        |                |                     |
|--------|----------------|---------------------|
| 153(3) | 4822 403 70777 | GARAGE (1) U.       |
| 154(3) | 4822 403 70624 | STAND (L) U.        |
| 155(3) | 4822 130 83053 | PHOTO (L) U.        |
| 156(3) | 4822 403 70625 | STAND (R) U.        |
| 157(3) | 4822 130 83054 | PHOTO (R) U.        |
| 158(3) | 4822 403 70641 | TAPE GUIDE U.       |
| 159(3) | 4822 691 20922 | DUMPER              |
| 160(3) | 4822 492 42636 | UP SPRING (R)       |
| 161(3) | 4822 492 42637 | UP SPRING (L)       |
| 162(3) | 4822 464 51026 | VTR FRAME           |
| 165(3) | 4822 532 52067 | WASHER              |
| 166(3) | 4822 532 52068 | WASHER              |
| 168(3) | 4822 502 21475 | SCREW               |
| 169(3) | 4822 502 21254 | SCREW               |
| 170(3) | 4822 464 51015 | BOTTOM FRAME        |
| 171(3) | 4822 401 11511 | INSULATION PIECE(A) |
| 173(3) | 4822 466 10625 | PHOTO FLEX.CARD     |
| 174(3) | 4822 522 33263 | DUMPER RELAY GEAR   |
| 175(3) | 4822 403 70617 | TAPE OPEN LEVER     |
| 176(3) | 4822 528 81483 | ARM HOLDER          |
| 177(3) | 4822 532 52067 | WASHER              |
| 178(3) | 4822 492 42639 | TAPE GUIDE SPRING   |

## CAMERA LENS SECTION

|        |                |                      |
|--------|----------------|----------------------|
| 401(4) | 4822 380 30327 | CRYSTAL FILTER       |
| 402(4) | 4822 691 20916 | CCD UNIT             |
| 403(4) | 4822 466 62427 | CCD CUSHION          |
| 404(4) | 4822 381 11486 | LENS U.              |
| 405(4) | 4822 691 20869 | ZOOM ENCODER U.      |
| 406(4) | 4822 466 83055 | CRYSTAL MOUNT PLATE  |
| 407(4) | 4822 361 21672 | ZOOM MOTOR U.        |
| 408(4) | 4822 361 21673 | FOCUS MOTOR U.       |
| 409(4) | 4822 535 93434 | Z GUIDE POLE         |
| 410(4) | 4822 535 93435 | F GUIDE POLE         |
| 411(4) | 4822 525 10133 | IRIS U.              |
| 412(4) | 4822 464 50999 | 2ND. MOVING FRAME U. |
| 413(4) | 4822 522 10474 | SCREW SHAFT U.       |
| 414(4) | 4822 464 51001 | 4TH. MOVING FRAME U. |
| 415(4) | 4822 464 51002 | MAIN FRAME U.        |
| 416(4) | 4822 464 51003 | 3RD. MOVING FRAME U. |
| 417(4) | 4822 691 20923 | LENS FLEX. U.        |
| 418(4) | 4822 466 62428 | CCD SHIELD CASE      |

## FRAME AND CASING SECTION

|        |                |                         |
|--------|----------------|-------------------------|
| 501(5) | 4822 432 60857 | SIDE CASE (R)(1) U.     |
| 502(5) | 4822 403 71109 | MODE SELECT LEVER U.    |
| 504(5) | 4822 432 60858 | CASSETTE COVER (1) U.   |
| 505(5) | 4822 410 62919 | CASSETTE LOCK BUTTON    |
| 506(5) | 4822 492 71422 | CASSETTE COIL SPRING    |
| 507(5) | 4822 502 21402 | SCREW                   |
| 508(5) | 4822 432 60861 | SIDE CASE (L)(1)U.      |
| 509(5) | 4822 410 63144 | ZOOM BUTTON U.          |
| 510(5) | 4822 492 71503 | CASSETTE HOLD SPRING    |
| 513(5) | 4822 410 62922 | S/S BUTTON (1) U.       |
| 514(5) | 4822 256 92153 | S/S BUTTON HOLDER       |
| 515(5) | 4822 492 71379 | S/S BUTTON COVER SPRING |
| 516(5) | 4822 403 70942 | S/S BUTTON SPACER       |
| 517(5) | 4822 466 93345 | S/S BUTTON SHEET        |
| 518(5) | 4822 276 13421 | RUBBER SW               |
| 519(5) | 4822 498 40603 | GRIP BELT U.            |
| 520(5) | 4822 432 60793 | AV JACK COVER           |
| 522(5) | 4822 403 71108 | DEW SENSOR              |
| 523(5) | 4822 462 71998 | HOOD CAP HINGE U.       |
| 525(5) | 4822 381 11444 | LENS PIECE              |
| 526(5) | 4822 459 11194 | LENS NAME PLATE         |
| 528(5) | 4822 466 93346 | MIC BARRIER             |
| 530(5) | 4822 432 60859 | FRONT CASE (1) U.       |
| 534(5) | 4822 413 31792 | FOCUS KNOB              |
| 535(5) | 4822 432 60863 | LENS COVER (1) U.       |
| 537(5) | 4822 532 61239 | LENS HOOD               |
| 538(5) | 4822 462 71877 | EYE CAP                 |
| 539(5) | 4822 432 60864 | SLIDE CASE U.           |
| 540(5) | 4822 520 30551 | ROTARY PIECE            |
| 541(5) | 4822 492 71504 | ROTATION LOCK SPRING    |
| 542(5) | 4822 432 60849 | PROTECTION PANEL        |

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST M621

|        |                |                            |
|--------|----------------|----------------------------|
| 543(5) | 4822 131 11013 | CRT U.                     |
| 544(5) | 4822 432 60862 | TOP OPERATION PANEL (1) U. |
| 545(5) | 4822 535 93433 | SHAFT                      |
| 546(5) | 4822 432 60865 | TOP DOOR                   |
| 547(5) | 4822 276 80439 | PANEL SW                   |
| 548(5) | 4822 492 71424 | EARTH ANGLE                |
| 549(5) | 4822 432 60792 | PANEL LIGHT                |
| 550(5) | 4822 410 62921 | CAM/VTR SELECT BUTTON      |
| 555(5) | 4822 464 50997 | LENS FRAME                 |
| 556(5) | 4822 403 70996 | SUPPORT ANGLE              |
| 557(5) | 4822 403 71114 | FRONT ANGLE                |
| 558(5) | 4822 505 11151 | CASE FIX. ANGLE            |
| 559(5) | 4822 462 72003 | MIC CAP                    |
| 560(5) | 4822 505 11166 | REAR CASE FIX. ANGLE       |
| 561(5) | 4822 502 21254 | SCREW                      |
| 562(5) | 4822 432 60866 | REAR CASE                  |
| 563(5) | 4822 403 71111 | BATTERY LOCK               |
| 564(5) | 4822 410 63145 | EJECT KNOB                 |
| 565(5) | 4822 403 71112 | EJECT KNOB HOLDER          |
| 566(5) | 4822 492 33453 | BATTERY LOCK SPRING        |
| 569(5) | 4822 432 60801 | CASE (R) FIX. ANGLE        |
| 570(5) | 4822 256 92115 | DC JACK HOLD ANGLE         |
| 576(5) | 4822 432 60854 | EVF CASE (L)               |
| 577(5) | 4822 432 60853 | EVF CASE (R)               |
| 578(5) | 4822 492 71505 | SLIDE SPRING               |
| 583(5) | 4822 464 51029 | TRIPOD FRAME               |
| 585(5) | 4822 502 21402 | SCREW                      |
| 586(5) | 4822 464 51028 | VTR FRAME (B)              |
| 587(5) | 4822 403 71113 | EVF FIXING PIECE           |
| 588(5) | 4822 466 83088 | EVF FIXING PLATE           |
| 589(5) | 4822 410 63146 | POWER SAVE KNOB            |
| 590(5) | 4822 502 21288 | SCREW                      |
| 591(5) | 4822 464 51027 | VTR FRAME (C)              |
| 592(5) | 4822 321 62409 | MIC CONNECTOR CABLE        |
| 593(5) | 4822 432 60867 | CAMERA OPERATION UNIT      |
| 594(5) | 4822 466 93348 | EVF FIXING PIECE BARRIER   |

### ACCESSORIES

|        |                |                                                               |
|--------|----------------|---------------------------------------------------------------|
| 605(6) | 4822 321 62082 | AC CORD                                                       |
| 606(6) | 4822 321 11021 | DC OUTPUT CABLE                                               |
| 608(6) | 4822 498 40597 | SHOLDER STRAP                                                 |
| 610(6) | 4822 736 53761 | OPERATING INSTRUCTIONS<br>(ENGLISH/GERMAN/FRENCH/<br>SPANISH) |
| 610(6) | 4822 736 53762 | OPERATING INSTRUCTIONS<br>(ITALIAN/DUTCH/SWEDISH/<br>Danish)  |
| 611(6) | 4822 321 60713 | AV CORD                                                       |
| 612(6) | 4822 263 50219 | 21 PIN ADAPTOR                                                |

### JIG & TOOLS (electrical)

|                |                          |
|----------------|--------------------------|
| 4822 397 30186 | VHS-C ALIGMENT TAPE      |
| 4822 397 60152 | COLOUR TEMP.CONV.FILRTER |
| 4822 480 30347 | COLOUR TEMP.CONV.FILRTER |
| 4822 321 61054 | EVF FIXTURE              |
| 4822 209 33292 | ROM                      |
| 4822 321 61621 | EVF CONNECTION CABLE 5P  |
| 4822 321 61617 | MEASURENT CABLE 24P      |
| 4822 321 61797 | FLAT CABLE 16P           |
| 4822 321 61798 | FLAT CABLE 9P            |
| 4822 321 61799 | FLAT CABLE 6P            |
| 4822 321 62236 | EXTENSION CABLE 12P      |
| 4822 321 62414 | EXTENSION CABLE 30P      |
| 4822 321 62073 | EXTENSION CABLE 3P       |
| 4822 321 62213 | FLAT CABLE 23P           |
| 4822 321 62216 | FLAT CABLE 18P           |

### JIGS & TOOLS (mechanical)

|                |                        |
|----------------|------------------------|
| 4822 395 50432 | H-POSITION ADJUSTMENT  |
| 4822 395 90918 | ASTERISK TYPE RENCH    |
| 4822 395 40055 | RETAINING RING REMOVER |
| 4822 395 50275 | POST ADJ. SCREW DRIVER |
| 4822 395 50184 | HEX WRENCH SET         |
| 4822 395 90256 | HEAD CLEANING STICK    |

## CAMERA MAIN C.B.A.

### CONNECTORS

|       |                |                    |
|-------|----------------|--------------------|
| B201  | 4822 265 41354 | CONNECTOR (12 PIN) |
| B302  | 4822 265 51368 | CONNECTOR (24 PIN) |
| B1001 | 4822 267 60343 | CONNECTOR (30 PIN) |
| B4002 | 4822 265 41353 | CONNECTOR (10 PIN) |
| B6004 | 4822 265 41278 | CONNECTOR (16 PIN) |

### CAPACITORS

|         |                |              |
|---------|----------------|--------------|
| C201    | 4822 125 60207 | 10pF/        |
| C202,03 | 4822 126 12221 | 6pF/ 50V     |
| C205    | 4822 126 11757 | 10pF/ 50V    |
| C207    | 4822 126 11771 | 22pF/ 50V    |
| C210    | 4822 126 11748 | 0.1μF/ 16V   |
| C211-13 | 4822 126 11767 | 15pF/ 50V    |
| C215    | 4822 126 10687 | 1μF/ 16V     |
| C216    | 4822 124 11281 | 10μF/ 6.3V   |
| C225    | 4822 124 11377 | 1.5μF/       |
| C233    | 4822 124 11237 | 3.3μF/ 16V   |
| C234    | 4822 124 11281 | 10μF/ 6.3V   |
| C236    | 4822 126 11777 | 33pF/ 50V    |
| C237    | 4822 126 11748 | 0.1μF/ 16V   |
| C238    | 4822 124 11233 | 22μF/ 6.3V   |
| C239    | 4822 126 11748 | 0.1μF/ 16V   |
| C240    | 4822 126 10687 | 1μF/ 16V     |
| C241-44 | 4822 126 11748 | 0.1μF/ 16V   |
| C245    | 4822 126 10687 | 1μF/ 16V     |
| C246    | 4822 126 11748 | 0.1μF/ 16V   |
| C247    | 4822 126 13079 | 0.047μF/ 50V |
| C249    | 4822 124 11281 | 10μF/ 6.3V   |
| C250    | 4822 121 70401 | 22μF/ 4V     |
| C251    | 4822 124 11145 | 10μF/ 4V     |
| C252,53 | 4822 126 11748 | 0.1μF/ 16V   |
| C254    | 4822 126 10687 | 1μF/ 16V     |
| C255    | 4822 126 11764 | 12pF/ 50V    |
| C256    | 4822 124 11281 | 10μF/ 6.3V   |
| C257    | 4822 126 11748 | 0.1μF/ 16V   |
| C258    | 4822 126 12197 | 1.8μF/ 16V   |
| C262    | 4822 126 11748 | 0.1μF/ 16V   |
| C265,66 | 4822 126 11774 | 27pF/ 50V    |
| C267    | 4822 126 11748 | 0.1μF/ 16V   |
| C269    | 4822 124 11376 | 4.7μF/ 20V   |
| C270    | 4822 126 11774 | 27pF/ 50V    |
| C271    | 4822 126 11748 | 0.1μF/ 16V   |
| C272    | 4822 126 11774 | 27pF/ 50V    |
| C273,74 | 4822 126 11748 | 0.1μF/ 16V   |
| C275,76 | 4822 126 11774 | 27pF/ 50V    |
| C301    | 4822 122 33788 | 82pF/ 50V    |
| C302,03 | 4822 126 10687 | 1μF/ 16V     |
| C304    | 4822 124 11281 | 10μF/ 6.3V   |
| C305    | 4822 126 11748 | 0.1μF/ 16V   |
| C306    | 4822 124 11281 | 10μF/ 6.3V   |
| C307    | 4822 122 33671 | 0.22μF/ 16V  |
| C308    | 4822 126 11768 | 150pF/ 50V   |
| C310    | 4822 126 11748 | 0.1μF/ 16V   |
| C312    | 4822 124 11281 | 10μF/ 6.3V   |
| C313    | 4822 126 11761 | 1000pF/ 50V  |
| C314    | 4822 126 11763 | 0.01μF/ 50V  |
| C315-17 | 4822 126 11748 | 0.1μF/ 16V   |

⚠.....Safety component, use only this type

## REPLACEMENT PARTSLIST M621

|          |                |              |          |                |              |
|----------|----------------|--------------|----------|----------------|--------------|
| C318-20  | 4822 126 10687 | 1μF/ 16V     | C1057    | 4822 126 13165 | 1μF/ 16V     |
| C322,23  | 4822 124 11281 | 10μF/ 6.3V   | C1058    | 4822 126 10687 | 1μF/ 16V     |
| C324     | 4822 126 11748 | 0.1μF/ 16V   | C1063    | 4822 126 11787 | 4700pF/ 50V  |
| C326     | 4822 126 11748 | 0.1μF/ 16V   | C1064    | 4822 124 80168 | 47μF/ 16V    |
| C329     | 4822 122 33749 | 0.1μF/ 50V   | C1066    | 4822 126 10687 | 1μF/ 16V     |
| C330     | 4822 124 11281 | 10μF/ 6.3V   | C3001    | 4822 124 23585 | 47μF/ 4V     |
| C331,32  | 4822 126 11748 | 0.1μF/ 16V   | C3002    | 4822 122 33725 | 1μF/ 16V     |
| C333     | 4822 126 11761 | 1000pF/ 50V  | C3003    | 4822 126 11769 | 18pF/ 50V    |
| C334,35  | 4822 124 11281 | 10μF/ 6.3V   | C3005    | 4822 126 12204 | 0.039μF/ 25V |
| C343,44  | 4822 126 11761 | 1000pF/ 50V  | C3006    | 4822 126 11769 | 18pF/ 50V    |
| C345,46  | 4822 126 10687 | 1μF/ 16V     | C3007    | 4822 126 11785 | 47pF/ 50V    |
| C347     | 4822 126 11761 | 1000pF/ 50V  | C3008    | 4822 126 11771 | 22pF/ 50V    |
| C348     | 4822 126 11788 | 56pF/ 50V    | C3011    | 4822 126 11788 | 56pF/ 50V    |
| C350     | 4822 126 10687 | 1μF/ 16V     | C3012    | 4822 126 11792 | 68pF/ 50V    |
| C351     | 4822 126 11788 | 56pF/ 50V    | C3015    | 4822 126 11792 | 68pF/ 50V    |
| C352     | 4822 126 11792 | 68pF/ 50V    | C3022    | 4822 126 11782 | 39pF/ 50V    |
| C353     | 4822 122 33749 | 0.1μF/ 50V   | C3023    | 4822 126 11783 | 390pF/ 50V   |
| C360     | 4822 126 11788 | 56pF/ 50V    | C3024    | 4822 126 11782 | 39pF/ 50V    |
| C370     | 4822 124 11281 | 10μF/ 6.3V   | C3027    | 4822 126 11771 | 22pF/ 50V    |
| C371     | 4822 126 11762 | 0.01μF/ 50V  | C3028    | 4822 124 80162 | 470μF/ 4V    |
| C701     | 4822 124 10759 | 1μF/ 16V     | C3030    | 4822 122 33777 | 470pF/ 50V   |
| C702     | 4822 126 13079 | 0.047μF/ 50V | C3031    | 4822 126 11782 | 39pF/ 50V    |
| C703     | 4822 124 11281 | 10μF/ 6.3V   | C3032    | 4822 124 11281 | 10μF/ 6.3V   |
| C710     | 4822 126 13079 | 0.047μF/ 50V | C3033,34 | 4822 126 11763 | 0.01μF/ 50V  |
| C711     | 4822 126 11778 | 330pF/ 50V   | C3035    | 4822 126 11762 | 0.01μF/ 50V  |
| C716     | 4822 126 10687 | 1μF/ 16V     | C3037    | 4822 126 11763 | 0.01μF/ 50V  |
| C719     | 4822 126 11761 | 1000pF/ 50V  | C3040    | 4822 124 11281 | 10μF/ 6.3V   |
| C720     | 4822 122 33749 | 0.1μF/ 50V   | C3041    | 4822 126 11763 | 0.01μF/ 50V  |
| C721     | 4822 126 11761 | 1000pF/ 50V  | C3042    | 4822 126 11782 | 39pF/ 50V    |
| C722     | 4822 122 33749 | 0.1μF/ 50V   | C3043    | 4822 126 11772 | 220pF/ 50V   |
| C724,25  | 4822 126 11763 | 0.01μF/ 50V  | C4001    | 4822 126 11766 | 1200pF/ 50V  |
| C729     | 4822 122 33749 | 0.1μF/ 50V   | C4002    | 4822 126 11776 | 2700pF/ 50V  |
| C730     | 4822 126 11748 | 0.1μF/ 16V   | C4003    | 4822 124 11238 | 0.33μF/ 35V  |
| C731     | 4822 126 13165 | 1μF/ 16V     | C4004    | 4822 126 11768 | 150pF/ 50V   |
| C732     | 4822 124 11281 | 10μF/ 6.3V   | C4005    | 4822 124 23245 | 3.3μF/ 50V   |
| C737     | 4822 126 11781 | 3300pF/ 50V  | C4006    | 4822 126 12208 | 0.015μF/ 16V |
| C738     | 4822 126 11759 | 100pF/ 50V   | C4007    | 4822 124 23243 | 1μF/ 50V     |
| C739     | 4822 124 23588 | 100μF/ 6.3V  | C4008    | 4822 124 23907 | 47μF/ 4V     |
| C779     | 4822 122 33725 | 1μF/ 16V     | C4009    | 4822 126 10687 | 1μF/ 16V     |
| C1001    | 4822 126 12198 | 3.3μF/ 16V   | C4010    | 4822 124 23907 | 47μF/ 4V     |
| C1002    | 4822 126 12194 | 47μF/ 12V    | C4011,12 | 4822 124 23242 | 10μF/ 16V    |
| C1003    | 4822 126 13164 | 8.pF/ 8V     | C4013    | 4822 126 12207 | 0.012μF/ 16V |
| C1004    | 4822 126 11778 | 330pF/ 50V   | C4014    | 4822 126 11781 | 3300pF/ 50V  |
| C1005    | 4822 126 13165 | 1μF/ 16V     | C4016    | 4822 126 11761 | 1000pF/ 50V  |
| C1006    | 4822 126 10687 | 1μF/ 16V     | C4017    | 4822 126 10687 | 1μF/ 16V     |
| C1007    | 4822 124 23907 | 47μF/ 4V     | C4018    | 4822 124 23242 | 10μF/ 16V    |
| C1008    | 4822 126 13164 | 8.pF/ 8V     | C4019    | 4822 126 11748 | 0.1μF/ 16V   |
| C1009    | 4822 126 11778 | 330pF/ 50V   | C4020    | 4822 124 23907 | 47μF/ 4V     |
| C1010    | 4822 126 13165 | 1μF/ 16V     | C4021    | 4822 126 11761 | 1000pF/ 50V  |
| C1011    | 4822 126 10687 | 1μF/ 16V     | C4022    | 4822 126 12932 | 4700pF/ 100V |
| C1012    | 4822 126 11761 | 1000pF/ 50V  | C4023    | 4822 126 11794 | 6800pF/ 50V  |
| C1013    | 4822 126 12194 | 47μF/ 12V    | C4024    | 4822 126 12924 | 0.022μF/ 16V |
| C1014    | 4822 126 12477 | 560pF/ 50V   | C4025    | 4822 124 23907 | 47μF/ 4V     |
| C1015    | 4822 124 23593 | 47μF/ 16V    | C4026    | 4822 124 23243 | 1μF/ 50V     |
| C1017    | 4822 126 12473 | 1μF/ 25V     | C4033,34 | 4822 126 11761 | 1000pF/ 50V  |
| C1019    | 4822 126 12474 | 0.47μF/ 25V  | C4035    | 4822 126 11773 | 2200pF/ 50V  |
| C1020    | 4822 126 10687 | 1μF/ 16V     | C4036    | 4822 126 11791 | 5600pF/ 50V  |
| C1022    | 4822 122 33749 | 0.1μF/ 50V   | C4037    | 4822 126 10687 | 1μF/ 16V     |
| C1024    | 4822 126 12199 | 0.47μF/ 16V  | C4038    | 4822 124 23237 | 22μF/ 6.3V   |
| C1025    | 4822 126 11257 | 0.1μF/ 16V   | C4040    | 4822 126 10687 | 1μF/ 16V     |
| C1026    | 4822 124 23243 | 1μF/ 50V     | C5001    | 4822 124 11281 | 10μF/ 6.3V   |
| C1027    | 4822 126 11759 | 100pF/ 50V   | C5002    | 4822 126 11763 | 0.01μF/ 50V  |
| C1028    | 4822 124 80169 | 0.47μF/ 50V  | C5003    | 4822 124 11281 | 10μF/ 6.3V   |
| C1029    | 4822 122 33777 | 470pF/ 50V   | C5004    | 4822 126 11763 | 0.01μF/ 50V  |
| C1030    | 4822 126 12218 | 8200pF/ 50V  | C5005    | 4822 122 33128 | 0.015μF/ 50V |
| C1031    | 4822 122 33777 | 470pF/ 50V   | C5006    | 4822 122 33735 | 0.027μF/ 50V |
| C1032    | 4822 126 12218 | 8200pF/ 50V  | C5007    | 4822 126 11763 | 0.01μF/ 50V  |
| C1033-35 | 4822 126 11761 | 1000pF/ 50V  | C5008    | 4822 124 11281 | 10μF/ 6.3V   |
| C1036    | 4822 122 33777 | 470pF/ 50V   | C5009    | 4822 126 11763 | 0.01μF/ 50V  |
| C1037    | 4822 126 12218 | 8200pF/ 50V  | C5011    | 4822 126 11257 | 0.1μF/ 16V   |
| C1040,41 | 4822 126 11762 | 0.01μF/ 50V  | C5013,14 | 4822 126 11763 | 0.01μF/ 50V  |
| C1042    | 4822 126 13165 | 1μF/ 16V     | C5021-26 | 4822 126 11763 | 0.01μF/ 50V  |
| C1043    | 4822 126 10687 | 1μF/ 16V     | C5027-30 | 4822 126 11774 | 27pF/ 50V    |
| C1051    | 4822 126 12199 | 0.47μF/ 16V  | C5031-38 | 4822 122 33731 | 0.1μF/ 25V   |
| C1056    | 4822 124 80599 | 33μF/ 4V     | C5039    | 4822 126 11765 | 12pF/ 50V    |

△.....Safety component, use only this type

# REPLACEMENT PARTSLIST M621

|          |                |          |      |
|----------|----------------|----------|------|
| C5041    | 4822 122 33749 | 0.1μF/   | 50V  |
| C5042    | 4822 126 11763 | 0.01μF/  | 50V  |
| C5043    | 4822 126 11782 | 39pF/    | 50V  |
| C5044    | 4822 126 11768 | 150pF/   | 50V  |
| C6001-04 | 4822 126 11748 | 0.1μF/   | 16V  |
| C6005    | 4822 126 10687 | 1μF/     | 16V  |
| C6006,07 | 4822 126 11764 | 12pF/    | 50V  |
| C6008    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6011    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6012,13 | 4822 126 11763 | 0.01μF/  | 50V  |
| C6014,15 | 4822 126 11748 | 0.1μF/   | 16V  |
| C6017    | 4822 126 11777 | 33pF/    | 50V  |
| C6018    | 4822 126 11769 | 18pF/    | 50V  |
| C6022,23 | 4822 126 11772 | 220pF/   | 50V  |
| C6024,25 | 4822 126 11748 | 0.1μF/   | 16V  |
| C6027    | 4822 124 23906 | 100μF/   | 4V   |
| C6030    | 4822 122 33725 | 1μF/     | 16V  |
| C6031    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6040    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6060    | 4822 126 11762 | 0.01μF/  | 50V  |
| C6100    | 4822 124 23242 | 10μF/    | 16V  |
| C6201    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6203    | 4822 124 23242 | 10μF/    | 16V  |
| C6204,05 | 4822 126 11731 | 1μF/     | 16V  |
| C6206    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6207,08 | 4822 124 23242 | 10μF/    | 16V  |
| C6209    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6210    | 4822 126 11763 | 0.01μF/  | 50V  |
| C6211    | 4822 126 12216 | 0.022μF/ | 50V  |
| C6213    | 4822 124 23907 | 47μF/    | 4V   |
| C6214    | 4822 126 12477 | 560pF/   | 50V  |
| C6221    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6230    | 4822 124 23237 | 22μF/    | 6.3V |
| C6231    | 4822 126 11748 | 0.1μF/   | 16V  |
| C8001    | 4822 126 11781 | 3300pF/  | 50V  |
| C8002    | 4822 126 11785 | 47pF/    | 50V  |
| C8003    | 4822 124 11292 | 4.7μF/   | 6.3V |
| C8004    | 4822 126 12218 | 8200pF/  | 50V  |
| C8005    | 4822 126 11748 | 0.1μF/   | 16V  |
| C8007,08 | 4822 126 11759 | 100pF/   | 50V  |
| C8010    | 4822 122 33788 | 82pF/    | 50V  |
| C8011    | 4822 126 11759 | 100pF/   | 50V  |
| C8012    | 4822 122 33788 | 82pF/    | 50V  |
| C8020    | 4822 126 11763 | 0.01μF/  | 50V  |
| C8021    | 4822 124 11281 | 10μF/    | 6.3V |
| C8022    | 4822 126 11759 | 100pF/   | 50V  |
| C8023    | 4822 122 33788 | 82pF/    | 50V  |
| C8024    | 4822 126 11777 | 33pF/    | 50V  |
| C8025    | 4822 126 11764 | 12pF/    | 50V  |
| C8026    | 4822 126 12221 | 6pF/     | 50V  |
| C8027    | 4822 126 11757 | 10pF/    | 50V  |
| C8030    | 4822 124 11281 | 10μF/    | 6.3V |
| C8031    | 4822 126 11763 | 0.01μF/  | 50V  |
| C8032    | 4822 126 11762 | 0.01μF/  | 50V  |
| C8033    | 4822 126 10687 | 1μF/     | 16V  |
| C8034-37 | 4822 126 11763 | 0.01μF/  | 50V  |
| C8038,39 | 4822 126 11748 | 0.1μF/   | 16V  |
| C8041    | 4822 126 11763 | 0.01μF/  | 50V  |
| C8042    | 4822 126 11748 | 0.1μF/   | 16V  |

## DIODES

|          |                |           |
|----------|----------------|-----------|
| D206-09  | 4822 130 83649 | 1SS355    |
| D301     | 4822 130 80732 | MA728     |
| D303,04  | 4822 130 80732 | MA728     |
| D305     | 4822 130 83649 | 1SS355    |
| D306     | 4822 130 80732 | MA728     |
| D703     | 4822 130 82443 | MA132WA   |
| D1002    | 4822 130 83495 | SFPB-76V  |
| D1004    | 4822 130 82729 | EC10QS04  |
| D1005    | 4822 130 82728 | SB05-05CP |
| D1006,07 | 4822 130 82732 | MA132K    |
| D1008    | 4822 130 80732 | MA728     |
| D1012    | 4822 130 82445 | MA133     |

|          |                |           |
|----------|----------------|-----------|
| D1015    | 4822 130 82025 | MA738     |
| D1062    | 4822 130 82728 | SB05-05CP |
| D1064    | 4822 130 80732 | MA728     |
| D5001,02 | 4822 130 82443 | MA132WA   |
| D6008    | 4822 130 80727 | MA110     |
| D6011    | 4822 130 82444 | MA132WK   |
| D6012,13 | 4822 130 82443 | MA132WA   |
| D6015    | 4822 130 80732 | MA728     |
| D6016    | 4822 130 82445 | MA133     |
| D6018    | 4822 130 80732 | MA728     |
| D6300    | 4822 130 82732 | MA132K    |
| D6301    | 4822 130 82445 | MA133     |
| D6303    | 4822 130 82018 | BR1102W   |
| D8002    | 4822 130 80727 | MA110     |

## FILTERS

|       |                |          |
|-------|----------------|----------|
| FL201 | 4822 242 81337 | ELB3H009 |
|-------|----------------|----------|

## CONNECTORS

|        |                |                   |
|--------|----------------|-------------------|
| FP301  | 4822 267 51344 | CONNECTOR(07 PIN) |
| FP701  | 4822 267 51293 | CONNECTOR(18 PIN) |
| FP4001 | 4822 267 51288 | CONNECTOR(09 PIN) |
| FP5001 | 4822 267 51289 | CONNECTOR(13 PIN) |
| FP6001 | 4822 267 51182 | CONNECTOR(16 PIN) |
| FP6002 | 4822 267 41072 | CONNECTOR(06 PIN) |
| FP6005 | 4822 267 60368 | CONNECTOR(23 PIN) |
| FP6006 | 4822 267 51291 | CONNECTOR(11 PIN) |

## INTEGRATED CIRCUITS

|          |                |              |
|----------|----------------|--------------|
| IC201    | 4822 209 33266 | VEFH39A      |
| IC203    | 4822 209 32978 | AN2018S      |
| IC204    | 4822 209 31743 | AN2033FAP    |
| IC206    | 4822 209 63557 | TC7S08F      |
| IC207    | 4822 209 32984 | TC7SU04F     |
| IC208    | 4822 209 60335 | TC7S04F      |
| IC301    | 4822 209 31404 | MN655431SH   |
| IC302    | 4822 209 32456 | MN67322      |
| IC303    | 4822 209 32455 | MN65702H     |
| IC304    | 4822 209 32799 | TC9074F      |
| IC305    | 4822 209 33258 | MN1864002M2B |
| IC306    | 4822 209 63541 | MN73512XWAS  |
| IC307,08 | 4822 209 32793 | M62353GP     |
| IC309    | 4822 209 32805 | X25040S-3C70 |
| IC705-07 | 4822 209 63526 | LM324DB      |
| IC708    | 4822 209 33265 | TB6512AF     |
| IC1001   | 4822 209 32778 | BA9706K      |
| IC3001   | 4822 209 32803 | VEFH32E      |
| IC3002   | 4822 209 31423 | TC7W04F      |
| IC4001   | 4822 209 33255 | BA7752FS     |
| IC5001   | 4822 209 32777 | AN3354FHP    |
| IC6001   | 4822 209 33259 | MN6755320M2A |
| IC6002   | 4822 209 31752 | S3500B3      |
| IC6003   | 4822 209 33256 | HJ6462       |
| IC6004   | 4822 209 61747 | TC4S66F      |
| IC6005   | 4822 209 32464 | BA6289F      |
| IC6006   | 4822 209 33264 | TA75W393FU   |
| IC6007   | 4822 209 31419 | RH5RE38AA    |
| IC6008   | 4822 209 33263 | PST9133      |
| IC8001   | 4822 209 33257 | LC89970MDTER |

△.....Safety component, use only this type

# REPLACEMENT PARTSLIST M621

## COILS

|          |                |            |
|----------|----------------|------------|
| L203,04  | 4822 157 63957 | coil 150μH |
| L206     | 4822 157 63957 | coil 150μH |
| L207     | 4822 157 70868 | coil 3.3μH |
| L209     | 4822 157 70624 | coil 68μH  |
| L210     | 4822 157 63957 | coil 150μH |
| L211     | 4822 157 70625 | coil 82μH  |
| L212     | 4822 157 63957 | coil 150μH |
| L215     | 4822 157 70866 | coil       |
| L220,21  | 4822 157 70988 | coil       |
| L222     | 4822 157 70254 | coil       |
| L230,31  | 4822 157 70866 | coil       |
| L301     | 4822 157 70255 | coil       |
| L302     | 4822 157 70254 | coil       |
| L303-05  | 4822 157 70255 | coil       |
| L306     | 4822 157 70254 | coil       |
| L307     | 4822 157 70255 | coil       |
| L308     | 4822 157 63955 | coil 10μH  |
| L309     | 4822 157 70254 | coil       |
| L310     | 4822 157 70255 | coil       |
| L311     | 4822 157 70254 | coil       |
| L312     | 4822 157 70867 | coil 22μH  |
| L313-18  | 4822 157 70255 | coil       |
| L319     | 4822 157 70254 | coil       |
| L321     | 4822 157 70255 | coil       |
| L325     | 4822 157 63961 | coil 39μH  |
| L701     | 4822 157 70255 | coil 6.8μH |
| L703     | 4822 157 70255 | coil 6.8μH |
| L706,07  | 4822 157 70255 | coil 6.8μH |
| L1001    | 4822 157 71103 | coil 4.7μH |
| L1002    | 4822 157 71105 | coil 21μH  |
| L1003    | 4822 157 71104 | coil 4.7μH |
| L1006    | 4822 157 62968 | coil 47μH  |
| L1007    | 4822 157 71106 | coil 90μH  |
| L1008    | 4822 157 71104 | coil 4.7μH |
| L1009    | 4822 157 62967 | coil 10μH  |
| L1010,11 | 4822 157 62333 | coil 100μH |
| L1012    | 4822 157 62967 | coil 10μH  |
| L1014    | 4822 157 62967 | coil 10μH  |
| L1015    | 4822 157 62055 | coil 15μH  |
| L1062    | 4822 157 71107 | coil 180μH |
| L3001    | 4822 157 63481 | coil 56μH  |
| L3002    | 4822 157 62333 | coil 100μH |
| L3003    | 4822 157 70631 | coil 82μH  |
| L3005    | 4822 157 62455 | coil 120μH |
| L3006    | 4822 157 53431 | coil 120μH |
| L3011    | 4822 157 62975 | coil 33μH  |
| L3012    | 4822 157 63957 | coil 150μH |
| L3013    | 4822 157 63954 | coil 150μH |
| L3014    | 4822 157 70629 | coil 22μH  |
| L3015    | 4822 157 62333 | coil 100μH |
| L3016    | 4822 157 63962 | coil 47μH  |
| L3021    | 4822 157 62333 | coil 100μH |
| L3022    | 4822 157 62975 | coil 33μH  |
| L4001    | 4822 157 62333 | coil 100μH |
| L5001-04 | 4822 157 62333 | coil 100μH |
| L5005    | 4822 157 62457 | coil 12μH  |
| L6001    | 4822 157 10207 | coil 33μH  |
| L6002    | 4822 157 62333 | coil 100μH |
| L8001    | 4822 157 62968 | coil 47μH  |
| L8002    | 4822 157 62055 | coil 15μH  |
| L8003    | 4822 157 63962 | coil 47μH  |
| L8004    | 4822 157 63958 | coil 27μH  |
| L8005,06 | 4822 157 63955 | coil 10μH  |
| L8007    | 4822 157 62055 | coil 15μH  |
| L8011    | 4822 157 52996 | coil 100μH |

## CONNECTORS

|       |                |                  |    |
|-------|----------------|------------------|----|
| P303  | 4822 265 31128 | CONNECTOR (MALE) | 6P |
| P4003 | 4822 265 41341 | CONNECTOR (MALE) | 7P |
| P4004 | 4822 265 31146 | CONNECTOR (MALE) | 3P |

## TRANSISTORS

|          |                |         |
|----------|----------------|---------|
| Q204     | 4822 130 62579 | 2SB1462 |
| Q206     | 4822 130 62582 | 2SC4627 |
| Q207     | 4822 130 62574 | XP1401  |
| Q208     | 4822 130 62577 | XP4601  |
| Q209-11  | 4822 130 63052 | XP4654  |
| Q301     | 4822 130 62576 | XP4501  |
| Q701     | 4822 130 61067 | XN1401  |
| Q702     | 4822 130 62575 | XP4401  |
| Q703     | 4822 130 61098 | 2SD874  |
| Q704,05  | 4822 130 62586 | 2SD2216 |
| Q706     | 4822 130 62809 | XP1501  |
| Q707,08  | 4822 130 62576 | XP4501  |
| Q709     | 4822 130 42666 | 2SD1030 |
| Q1001    | 4822 130 63512 | 2SA1731 |
| Q1002,03 | 4822 130 42734 | 2SB798  |
| Q1004    | 4822 130 62585 | 2SD2210 |
| Q1005    | 4822 130 62345 | 2SB1073 |
| Q1062    | 4822 130 42734 | 2SB798  |
| Q3001    | 4822 130 62203 | XN4501  |
| Q3002    | 4822 130 62202 | XN4401  |
| Q3005    | 4822 130 62579 | 2SB1462 |
| Q3006    | 4822 130 42664 | 2SB970X |
| Q3011,12 | 4822 130 62582 | 2SC4627 |
| Q3013    | 4822 130 62586 | 2SD2216 |
| Q3020,21 | 4822 130 62579 | 2SB1462 |
| Q3022    | 4822 130 62582 | 2SC4627 |
| Q4001    | 4822 130 62576 | XP4501  |
| Q4003    | 4822 130 62579 | 2SB1462 |
| Q4004    | 4822 130 62586 | 2SD2216 |
| Q4005    | 4822 130 63462 | 2SD602A |
| Q4006    | 4822 130 61076 | 2SB1219 |
| Q4007,08 | 4822 130 62586 | 2SD2216 |
| Q4011    | 4822 130 62586 | 2SD2216 |
| Q4012    | 4822 130 62576 | XP4501  |
| Q5001,02 | 4822 130 62225 | XN4504  |
| Q5003,04 | 4822 130 61068 | XN1501  |
| Q5011,12 | 4822 130 61074 | 2SA812  |
| Q6002    | 4822 130 62586 | 2SD2216 |
| Q6004    | 4822 130 62586 | 2SD2216 |
| Q6005    | 4822 130 63062 | XP6501  |
| Q6006    | 4822 130 62579 | 2SB1462 |
| Q6201    | 4822 130 62579 | 2SB1462 |
| Q6300    | 4822 130 62579 | 2SB1462 |
| Q6301    | 4822 130 62586 | 2SD2216 |
| Q8004    | 4822 130 62579 | 2SB1462 |
| Q8005    | 4822 130 62586 | 2SD2216 |
| Q8006    | 4822 130 62582 | 2SC4627 |

## TRANSISTOR RESISTORS

|          |                |         |
|----------|----------------|---------|
| QR301    | 4822 130 62564 | UN9212  |
| QR701    | 4822 130 62563 | UN9211  |
| QR1002   | 4822 130 62566 | UN9214  |
| QR1006   | 4822 130 63055 | UN2130X |
| QR1061   | 4822 130 62831 | UN9115  |
| QR3001   | 4822 130 62564 | UN9212  |
| QR3005   | 4822 130 62564 | UN9212  |
| QR4001,0 | 4822 130 63059 | XP1213  |
| QR5001,0 | 4822 130 62565 | UN9213  |
| QR5004   | 4822 130 63055 | UN2130X |
| QR5005   | 4822 130 62565 | UN9213  |
| QR6001   | 4822 130 63055 | UN2130X |
| QR6003   | 4822 130 62558 | UN9112  |
| QR6004   | 4822 130 63456 | XP4115  |
| QR6007   | 4822 130 62563 | UN9211  |
| QR6008   | 4822 130 62562 | UN9210  |
| QR6010   | 4822 130 63059 | XP1213  |
| QR6012   | 4822 130 63059 | XP1213  |
| QR6014   | 4822 130 62565 | UN9213  |
| QR6015   | 4822 130 62567 | UN9215  |
| QR6016   | 4822 130 63059 | XP1213  |
| QR6018   | 4822 130 62832 | UN921E  |
| QR8001   | 4822 130 62565 | UN9213  |

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST M621

### RESISTORS

|         |                |             |
|---------|----------------|-------------|
| R201    | 4822 116 81049 | 1MΩ 1/16W   |
| R202    | 4822 116 81067 | 220Ω 1/16W  |
| R203    | 4822 116 81089 | 470Ω 1/16W  |
| R205    | 4822 116 81095 | 560Ω 1/16W  |
| R207    | 4822 116 81089 | 470Ω 1/16W  |
| R212    | 4822 116 81095 | 560Ω 1/16W  |
| R214-17 | 4822 116 81046 | 1KΩ 1/16W   |
| R218    | 4822 116 81067 | 220Ω 1/16W  |
| R223,24 | 4822 116 81074 | 2.7KΩ 1/16W |
| R225    | 4822 116 81101 | 6.8KΩ 1/16W |
| R233    | 4822 116 81078 | 330Ω 1/16W  |
| R236    | 4822 116 81107 | 820Ω 1/16W  |
| R237    | 4822 116 81047 | 10KΩ 1/16W  |
| R238    | 4822 116 81052 | 1.2KΩ 1/16W |
| R239    | 4822 116 81074 | 2.7KΩ 1/16W |
| R241,42 | 4822 116 81101 | 6.8KΩ 1/16W |
| R243    | 4822 116 81068 | 2.2KΩ 1/16W |
| R244    | 4822 116 81074 | 2.7KΩ 1/16W |
| R245    | 4822 116 81085 | 3.9KΩ 1/16W |
| R246    | 4822 116 81046 | 1KΩ 1/16W   |
| R247    | 4822 116 81103 | 680KΩ 1/16W |
| R249    | 4822 116 81096 | 5.6KΩ 1/16W |
| R250    | 4822 116 81062 | 1.8KΩ 1/16W |
| R251    | 4822 116 81096 | 5.6KΩ 1/16W |
| R252    | 4822 116 81056 | 1.5KΩ 1/16W |
| R253    | 4822 116 81108 | 82KΩ 1/16W  |
| R255    | 4822 116 81046 | 1KΩ 1/16W   |
| R256    | 4822 116 81091 | 4.7KΩ 1/16W |
| R257    | 4822 116 81064 | 180KΩ 1/16W |
| R258    | 4822 116 81049 | 1MΩ 1/16W   |
| R260    | 4822 116 81091 | 4.7KΩ 1/16W |
| R263    | 4822 116 81078 | 330Ω 1/16W  |
| R264    | 4822 116 81067 | 220Ω 1/16W  |
| R265    | 4822 116 81068 | 2.2KΩ 1/16W |
| R266    | 4822 116 81079 | 3.3KΩ 1/16W |
| R267    | 4822 116 81112 | 0.00Ω 1/16W |
| R268    | 4822 116 81045 | 100Ω 1/16W  |
| R269    | 4822 116 81077 | 33Ω 1/16W   |
| R270    | 4822 116 81099 | 680Ω 1/16W  |
| R271    | 4822 116 81112 | 0.00Ω 1/16W |
| R272,73 | 4822 116 81077 | 33Ω 1/16W   |
| R274    | 4822 116 81046 | 1KΩ 1/16W   |
| R275    | 4822 116 81049 | 1MΩ 1/16W   |
| R280    | 4822 116 81112 | 0.00Ω 1/16W |
| R282    | 4822 116 81112 | 0.00Ω 1/16W |
| R284    | 4822 116 81112 | 0.00Ω 1/16W |
| R285    | 4822 116 81077 | 33Ω 1/16W   |
| R286    | 4822 116 81099 | 680Ω 1/16W  |
| R287,88 | 4822 116 81077 | 33Ω 1/16W   |
| R289    | 4822 116 81112 | 0.00Ω 1/16W |
| R290    | 4822 116 81077 | 33Ω 1/16W   |
| R291    | 4822 116 81099 | 680Ω 1/16W  |
| R292,93 | 4822 116 81077 | 33Ω 1/16W   |
| R295    | 4822 116 81083 | 39Ω 1/16W   |
| R296    | 4822 116 81068 | 2.2KΩ 1/16W |
| R297    | 4822 116 81091 | 4.7KΩ 1/16W |
| R298    | 4822 116 81046 | 1KΩ 1/16W   |
| R299    | 4822 116 81074 | 2.7KΩ 1/16W |
| R301    | 4822 116 81067 | 220Ω 1/16W  |
| R302,03 | 4822 116 81069 | 22KΩ 1/16W  |
| R304,05 | 4822 116 81046 | 1KΩ 1/16W   |
| R307    | 4822 116 81046 | 1KΩ 1/16W   |
| R310    | 4822 116 81069 | 22KΩ 1/16W  |
| R311    | 4822 116 81063 | 18KΩ 1/16W  |
| R312,13 | 4822 116 81053 | 12KΩ 1/16W  |
| R314    | 4822 116 81063 | 18KΩ 1/16W  |
| R315    | 4822 116 81047 | 10KΩ 1/16W  |
| R316    | 4822 116 81052 | 1.2KΩ 1/16W |
| R317    | 4822 116 81046 | 1KΩ 1/16W   |
| R318,19 | 4822 116 81091 | 4.7KΩ 1/16W |
| R320    | 4822 116 81052 | 1.2KΩ 1/16W |
| R321    | 4822 116 81046 | 1KΩ 1/16W   |

|         |                |             |
|---------|----------------|-------------|
| R322    | 4822 116 81091 | 4.7KΩ 1/16W |
| R323    | 4822 116 81048 | 100KΩ 1/16W |
| R326-28 | 4822 116 81092 | 47KΩ 1/16W  |
| R329-31 | 4822 116 81091 | 4.7KΩ 1/16W |
| R332    | 4822 116 81081 | 33KΩ 1/16W  |
| R333    | 4822 116 81069 | 22KΩ 1/16W  |
| R334,35 | 4822 116 81092 | 47KΩ 1/16W  |
| R336    | 4822 116 81091 | 4.7KΩ 1/16W |
| R337-40 | 4822 116 81049 | 1MΩ 1/16W   |
| R342    | 4822 116 81097 | 56KΩ 1/16W  |
| R343-45 | 4822 116 81092 | 47KΩ 1/16W  |
| R348-54 | 4822 116 81092 | 47KΩ 1/16W  |
| R355-58 | 4822 116 81045 | 100Ω 1/16W  |
| R359    | 4822 116 81099 | 680Ω 1/16W  |
| R360    | 4822 116 81097 | 56KΩ 1/16W  |
| R361    | 4822 116 81091 | 4.7KΩ 1/16W |
| R371    | 4822 116 81053 | 12KΩ 1/16W  |
| R374    | 4822 116 81068 | 2.2KΩ 1/16W |
| R375-83 | 4822 116 81046 | 1KΩ 1/16W   |
| R385    | 4822 116 81047 | 10KΩ 1/16W  |
| R386    | 4822 116 81762 | 4.7Ω 1/16W  |
| R390    | 4822 116 81046 | 1KΩ 1/16W   |
| R391    | 4822 116 81047 | 10KΩ 1/16W  |
| R392    | 4822 116 81102 | 68KΩ 1/16W  |
| R701    | 4822 116 81057 | 15KΩ 1/16W  |
| R702,03 | 4822 116 81074 | 2.7KΩ 1/16W |
| R704    | 4822 116 81046 | 1KΩ 1/16W   |
| R705    | 4822 100 12145 | 33KΩ        |
| R708    | 4822 116 81046 | 1KΩ 1/16W   |
| R709    | 4822 100 12145 | 33KΩ        |
| R710    | 4822 100 12141 | 22KΩ        |
| R711    | 4822 100 12077 | 1KΩ         |
| R712    | 4822 100 30185 | 1.5KΩ       |
| R713    | 4822 100 12146 | 560Ω        |
| R714    | 4822 116 81046 | 1KΩ 1/16W   |
| R715,16 | 4822 116 81091 | 4.7KΩ 1/16W |
| R717    | 4822 116 81067 | 220Ω 1/16W  |
| R718    | 4822 051 30225 | 2.2MΩ 1/16W |
| R719    | 4822 116 81112 | 0.00Ω 1/16W |
| R720,21 | 4822 116 81047 | 10KΩ 1/16W  |
| R722    | 4822 116 81048 | 100KΩ 1/16W |
| R723    | 4822 116 81058 | 150KΩ 1/16W |
| R724    | 4822 116 81046 | 1KΩ 1/16W   |
| R725    | 4822 116 81045 | 100Ω 1/16W  |
| R726    | 4822 117 10603 | 2KΩ 1/16W   |
| R727    | 4822 116 81069 | 22KΩ 1/16W  |
| R728    | 4822 116 81075 | 27KΩ 1/16W  |
| R729    | 4822 116 81063 | 18KΩ 1/16W  |
| R730    | 4822 116 81047 | 10KΩ 1/16W  |
| R731,32 | 4822 116 81092 | 47KΩ 1/16W  |
| R733    | 4822 116 81071 | 220KΩ 1/16W |
| R734,35 | 4822 116 81053 | 12KΩ 1/16W  |
| R736    | 4822 116 81093 | 470KΩ 1/16W |
| R737    | 4822 116 81087 | 390KΩ 1/16W |
| R738    | 4822 116 81071 | 220KΩ 1/16W |
| R739    | 4822 116 81057 | 15KΩ 1/16W  |
| R740    | 4822 116 81075 | 27KΩ 1/16W  |
| R741    | 4822 116 81092 | 47KΩ 1/16W  |
| R742    | 4822 116 81069 | 22KΩ 1/16W  |
| R743    | 4822 116 81057 | 15KΩ 1/16W  |
| R744    | 4822 116 81047 | 10KΩ 1/16W  |
| R745    | 4822 116 81092 | 47KΩ 1/16W  |
| R746    | 4822 116 81057 | 15KΩ 1/16W  |
| R747,48 | 4822 116 81047 | 10KΩ 1/16W  |
| R749    | 4822 116 82791 | 10KΩ 1/16W  |
| R750    | 4822 116 82839 | 30KΩ 1/16W  |
| R751    | 4822 116 81067 | 220Ω 1/16W  |
| R752    | 4822 116 81061 | 180Ω 1/16W  |
| R753    | 4822 100 12139 |             |
| R754    | 4822 116 81046 | 1KΩ 1/16W   |
| R755    | 4822 100 12139 |             |
| R756    | 4822 116 81092 | 47KΩ 1/16W  |
| R757    | 4822 117 10602 | 11KΩ 1/16W  |
| R758    | 4822 116 82495 | 39KΩ 1/16W  |
| R759    | 4822 116 81091 | 4.7KΩ 1/16W |

△.....Safety component, use only this type



# REPLACEMENT PARTSLIST M621

|          |                |             |          |                |             |
|----------|----------------|-------------|----------|----------------|-------------|
| R760     | 4822 051 30338 | 3.3Ω 1/16W  | R3063,64 | 4822 116 81052 | 1.2KΩ 1/16W |
| R761     | 4822 116 81108 | 82KΩ 1/16W  | R3071,72 | 4822 116 81074 | 2.7KΩ 1/16W |
| R763     | 4822 116 81092 | 47KΩ 1/16W  | R3073    | 4822 116 81046 | 1KΩ 1/16W   |
| R764     | 4822 051 30338 | 3.3Ω 1/16W  | R3074    | 4822 116 81068 | 2.2KΩ 1/16W |
| R765     | 4822 051 30125 | 1.2MΩ 1/16W | R3081    | 4822 116 81068 | 2.2KΩ 1/16W |
| R767     | 4822 116 81097 | 56KΩ 1/16W  | R3082    | 4822 116 81069 | 22KΩ 1/16W  |
| R1001    | 4822 116 83317 | 8.2KΩ       | R3086    | 4822 116 81096 | 5.6KΩ 1/16W |
| R1002    | 4822 117 10133 | 2.7KΩ       | R3090,91 | 4822 116 81112 | 0Ω 1/16W    |
| R1003    | 4822 116 81046 | 1KΩ 1/16W   | R4001    | 4822 116 81044 | 10Ω 1/16W   |
| R1004    | 4822 116 81084 | 390Ω 1/16W  | R4002    | 4822 116 81081 | 33KΩ 1/16W  |
| R1005    | 4822 117 10135 | 5.6KΩ       | R4003    | 4822 116 81094 | 56Ω 1/16W   |
| R1006    | 4822 117 10133 | 2.7KΩ       | R4004    | 4822 100 12029 | 2.7KΩ       |
| R1007    | 4822 116 83295 | 33Ω 1/8W    | R4005    | 4822 116 81082 | 330KΩ 1/16W |
| R1008    | 4822 116 83312 | 10KΩ        | R4006    | 4822 100 12031 | 3.3KΩ       |
| R1009    | 4822 116 83313 | 1.5KΩ       | R4008,09 | 4822 116 81063 | 18KΩ 1/16W  |
| R1010    | 4822 116 81046 | 1KΩ 1/16W   | R4010    | 4822 100 12028 |             |
| R1012    | 4822 100 30183 | 39KΩ        | R4011    | 4822 100 12144 |             |
| R1013    | 4822 116 83316 | 1.8KΩ       | R4012    | 4822 116 81049 | 1MΩ 1/16W   |
| R1014,15 | 4822 117 10131 |             | R4013    | 4822 116 81081 | 33KΩ 1/16W  |
| R1016    | 4822 116 83306 | 15KΩ 1/10W  | R4014    | 4822 116 81053 | 12KΩ 1/16W  |
| R1017    | 4822 051 20102 | 1KΩ 1/10W   | R4015    | 4822 116 81056 | 1.5KΩ 1/16W |
| R1018    | 4822 116 81055 | 150Ω 1/16W  | R4016    | 4822 116 81063 | 18KΩ 1/16W  |
| R1019    | 4822 051 20102 | 1KΩ 1/10W   | R4017    | 4822 116 81078 | 330Ω 1/16W  |
| R1020    | 4822 116 81055 | 150Ω 1/16W  | R4018    | 4822 116 81085 | 3.9KΩ 1/16W |
| R1021    | 4822 116 81077 | 33Ω 1/16W   | R4019    | 4822 116 81068 | 2.2KΩ 1/16W |
| R1022    | 4822 051 30159 | 15Ω 1/16W   | R4020    | 4822 116 81069 | 22KΩ 1/16W  |
| R1023    | 4822 116 81062 | 1.8KΩ 1/16W | R4021    | 4822 116 81057 | 15KΩ 1/16W  |
| R1024    | 4822 116 81088 | 47Ω 1/16W   | R4022    | 4822 116 81069 | 22KΩ 1/16W  |
| R1025    | 4822 051 20102 | 1KΩ 1/10W   | R4023,24 | 4822 116 81091 | 4.7KΩ 1/16W |
| R1026    | 4822 116 81046 | 1KΩ 1/16W   | R4025    | 4822 116 83271 | 2.2MΩ 1/10W |
| R1027    | 4822 116 81055 | 150Ω 1/16W  | R4026    | 4822 116 81097 | 56KΩ 1/16W  |
| R1033    | 4822 116 81046 | 1KΩ 1/16W   | R4027,28 | 4822 116 81091 | 4.7KΩ 1/16W |
| R1035    | 4822 116 81088 | 47Ω 1/16W   | R4029    | 4822 116 81097 | 56KΩ 1/16W  |
| R1038    | 4822 100 12113 | 75Ω 1/10W   | R4030    | 4822 116 81045 | 100Ω 1/16W  |
| R1039    | 4822 100 12074 |             | R4031,32 | 4822 116 81091 | 4.7KΩ 1/16W |
| R1040    | 4822 100 12111 | 150Ω 1/10W  | R4033    | 4822 116 82344 | 68Ω 1/16W   |
| R1051    | 4822 100 12079 | 27KΩ        | R4034    | 4822 116 81068 | 2.2KΩ 1/16W |
| R1052    | 4822 100 12082 | 47KΩ        | R4035    | 4822 116 81046 | 1KΩ 1/16W   |
| R1062    | 4822 051 20391 | 390Ω 1/10W  | R4036,37 | 4822 116 81069 | 22KΩ 1/16W  |
| R1063    | 4822 116 81047 | 10KΩ 1/16W  | R4038    | 4822 051 20123 | 12KΩ 1/10W  |
| R1065    | 4822 116 81052 | 1.2KΩ 1/16W | R4047    | 4822 116 81047 | 10KΩ 1/16W  |
| R1071    | 4822 116 81046 | 1KΩ 1/16W   | R4049,50 | 4822 116 81047 | 10KΩ 1/16W  |
| R1072    | 4822 116 81048 | 100KΩ 1/16W | R4051    | 4822 116 81096 | 5.6KΩ 1/16W |
| R1073    | 4822 116 81045 | 100Ω 1/16W  | R4052    | 4822 116 81078 | 330Ω 1/16W  |
| R1080    | 4822 051 10008 | 0Ω 1/8W     | R4053    | 4822 116 81068 | 2.2KΩ 1/16W |
| R3001    | 4822 116 82345 | 75Ω 1/16W   | R4054    | 4822 116 81069 | 22KΩ 1/16W  |
| R3002    | 4822 051 30225 | 2.2MΩ 1/16W | R4055    | 4822 116 81095 | 560Ω 1/16W  |
| R3003,04 | 4822 116 81112 | 0.00Ω 1/16W | R5001    | 4822 116 81062 | 1.8KΩ 1/16W |
| R3005    | 4822 116 81073 | 270Ω 1/16W  | R5002    | 4822 116 81095 | 560Ω 1/16W  |
| R3008    | 4822 051 30008 | 0Ω 1/16W    | R5003    | 4822 116 81091 | 4.7KΩ 1/16W |
| R3009    | 4822 116 81056 | 1.5KΩ 1/16W | R5005    | 4822 116 81101 | 6.8KΩ 1/16W |
| R3010    | 4822 116 81063 | 18KΩ 1/16W  | R5011,12 | 4822 116 81067 | 220Ω 1/16W  |
| R3015,16 | 4822 116 81052 | 1.2KΩ 1/16W | R5013-16 | 4822 116 81107 | 820Ω 1/16W  |
| R3017    | 4822 116 81084 | 390Ω 1/16W  | R5017    | 4822 116 81044 | 10Ω 1/16W   |
| R3018    | 4822 116 81073 | 270Ω 1/16W  | R5021    | 4822 116 81142 | 8.2KΩ 1/16W |
| R3019    | 4822 116 81107 | 820Ω 1/16W  | R5022    | 4822 116 81063 | 18KΩ 1/16W  |
| R3021,22 | 4822 116 81047 | 10KΩ 1/16W  | R5023    | 4822 116 81073 | 270Ω 1/16W  |
| R3023,24 | 4822 116 81095 | 560Ω 1/16W  | R5024    | 4822 116 81061 | 180Ω 1/16W  |
| R3025,26 | 4822 116 81099 | 680Ω 1/16W  | R5025    | 4822 116 83273 | 4.7Ω 1/10W  |
| R3027    | 4822 116 81056 | 1.5KΩ 1/16W | R6002    | 4822 116 81056 | 1.5KΩ 1/16W |
| R3028    | 4822 116 81095 | 560Ω 1/16W  | R6003    | 4822 116 81076 | 270KΩ 1/16W |
| R3029    | 4822 116 81091 | 4.7KΩ 1/16W | R6004    | 4822 116 81075 | 27KΩ 1/16W  |
| R3032    | 4822 116 81056 | 1.5KΩ 1/16W | R6011    | 4822 116 81102 | 68KΩ 1/16W  |
| R3035    | 4822 116 81112 | 0Ω 1/16W    | R6012    | 4822 116 81046 | 1KΩ 1/16W   |
| R3036    | 4822 116 81107 | 820Ω 1/16W  | R6013    | 4822 116 81047 | 10KΩ 1/16W  |
| R3037    | 4822 116 81079 | 3.3KΩ 1/16W | R6014    | 4822 116 81049 | 1MΩ 1/16W   |
| R3038    | 4822 116 81046 | 1KΩ 1/16W   | R6015    | 4822 116 81047 | 10KΩ 1/16W  |
| R3040    | 4822 116 81078 | 330Ω 1/16W  | R6016    | 4822 116 81091 | 4.7KΩ 1/16W |
| R3050    | 4822 116 81099 | 680Ω 1/16W  | R6017    | 4822 116 81092 | 47KΩ 1/16W  |
| R3051    | 4822 116 81112 | 0Ω 1/16W    | R6018    | 4822 116 81069 | 22KΩ 1/16W  |
| R3057    | 4822 116 81112 | 0Ω 1/16W    | R6019    | 4822 116 81071 | 220KΩ 1/16W |
| R3058    | 4822 116 81068 | 2.2KΩ 1/16W | R6020    | 4822 116 81069 | 22KΩ 1/16W  |
| R3059    | 4822 116 81107 | 820Ω 1/16W  | R6021    | 4822 051 10129 | 12Ω 1/8W    |
| R3060    | 4822 116 82344 | 68Ω 1/16W   | R6022    | 4822 116 81069 | 22KΩ 1/16W  |
| R3062    | 4822 116 81046 | 1KΩ 1/16W   | R6024    | 4822 116 81102 | 68KΩ 1/16W  |

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST M621

|          |                |             |
|----------|----------------|-------------|
| R6025    | 4822 116 81046 | 1KΩ 1/16W   |
| R6026    | 4822 116 81092 | 47KΩ 1/16W  |
| R6027,28 | 4822 051 20221 | 220Ω 1/10W  |
| R6029    | 4822 116 81091 | 4.7KΩ 1/16W |
| R6030    | 4822 116 81112 | 0.00Ω 1/16W |
| R6031    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6032,33 | 4822 116 81046 | 1KΩ 1/16W   |
| R6034    | 4822 116 81045 | 100Ω 1/16W  |
| R6035    | 4822 116 81047 | 10KΩ 1/16W  |
| R6039    | 4822 051 10228 | 2.2Ω 1/8W   |
| R6040    | 4822 116 81071 | 220KΩ 1/16W |
| R6041    | 4822 116 81103 | 680KΩ 1/16W |
| R6042    | 4822 116 81053 | 12KΩ 1/16W  |
| R6043    | 4822 116 81071 | 220KΩ 1/16W |
| R6044    | 4822 116 82632 | 22KΩ 1/10W  |
| R6045    | 4822 100 12112 | 33KΩ 1/10W  |
| R6048,49 | 4822 116 81092 | 47KΩ 1/16W  |
| R6050    | 4822 116 81102 | 68KΩ 1/16W  |
| R6051    | 4822 116 81093 | 470KΩ 1/16W |
| R6052,53 | 4822 116 81064 | 180KΩ 1/16W |
| R6054    | 4822 116 81092 | 47KΩ 1/16W  |
| R6055,56 | 4822 116 81046 | 1KΩ 1/16W   |
| R6059    | 4822 116 81112 | 0.00Ω 1/16W |
| R6060    | 4822 116 81085 | 3.9KΩ 1/16W |
| R6061    | 4822 116 81057 | 15KΩ 1/16W  |
| R6063    | 4822 116 81046 | 1KΩ 1/16W   |
| R6066    | 4822 116 81102 | 68KΩ 1/16W  |
| R6070    | 4822 116 81045 | 100Ω 1/16W  |
| R6071    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6073    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6074    | 4822 116 81047 | 10KΩ 1/16W  |
| R6075    | 4822 116 81079 | 3.3KΩ 1/16W |
| R6076    | 4822 116 81074 | 2.7KΩ 1/16W |
| R6078    | 4822 116 81085 | 3.9KΩ 1/16W |
| R6079    | 4822 116 81112 | 0.00Ω 1/16W |
| R6080    | 4822 116 81102 | 68KΩ 1/16W  |
| R6090,91 | 4822 116 81079 | 3.3KΩ 1/16W |
| R6108    | 4822 116 81046 | 1KΩ 1/16W   |
| R6111    | 4822 116 81097 | 56KΩ 1/16W  |
| R6112    | 4822 116 81081 | 33KΩ 1/16W  |
| R6113    | 4822 116 81092 | 47KΩ 1/16W  |
| R6120,21 | 4822 116 81147 | 0Ω 1/10W    |
| R6130    | 4822 116 81107 | 820Ω 1/16W  |
| R6131    | 4822 116 81046 | 1KΩ 1/16W   |
| R6134    | 4822 116 81102 | 68KΩ 1/16W  |
| R6135    | 4822 116 81051 | 120Ω 1/16W  |
| R6136    | 4822 116 81046 | 1KΩ 1/16W   |
| R6137    | 4822 116 81048 | 100KΩ 1/16W |
| R6138    | 4822 116 81102 | 68KΩ 1/16W  |
| R6139    | 4822 116 81092 | 47KΩ 1/16W  |
| R6140    | 4822 116 81102 | 68KΩ 1/16W  |
| R6142    | 4822 116 81047 | 10KΩ 1/16W  |
| R6143    | 4822 116 81092 | 47KΩ 1/16W  |
| R6144    | 4822 116 81046 | 1KΩ 1/16W   |
| R6145    | 4822 116 81085 | 3.9KΩ 1/16W |
| R6150    | 4822 116 81074 | 2.7KΩ 1/16W |
| R6151    | 4822 116 81082 | 330KΩ 1/16W |
| R6152    | 4822 116 81054 | 120KΩ 1/16W |
| R6153    | 4822 116 81093 | 470KΩ 1/16W |
| R6154    | 4822 116 81048 | 100KΩ 1/16W |
| R6155    | 4822 116 81102 | 68KΩ 1/16W  |
| R6160    | 4822 116 81046 | 1KΩ 1/16W   |
| R6161    | 4822 116 81048 | 100KΩ 1/16W |
| R6168    | 4822 116 81102 | 68KΩ 1/16W  |
| R6170    | 4822 116 81046 | 1KΩ 1/16W   |
| R6199    | 4822 116 81046 | 1KΩ 1/16W   |
| R6203    | 4822 116 81047 | 10KΩ 1/16W  |
| R6205    | 4822 116 81071 | 220KΩ 1/16W |
| R6206,07 | 4822 116 81048 | 100KΩ 1/16W |
| R6208    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6209    | 4822 116 81061 | 180Ω 1/16W  |
| R6210,11 | 4822 116 81068 | 2.2KΩ 1/16W |
| R6212    | 4822 116 81047 | 10KΩ 1/16W  |
| R6213    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6214    | 4822 116 81048 | 100KΩ 1/16W |

|          |                |             |
|----------|----------------|-------------|
| R6215    | 4822 116 81112 | 0Ω 1/16W    |
| R6216    | 4822 051 10228 | 2.2Ω 1/8W   |
| R6230    | 4822 116 83268 | 1.5MΩ 1/16W |
| R6231    | 4822 051 10228 | 2.2Ω 1/8W   |
| R6300    | 4822 116 81101 | 6.8KΩ 1/16W |
| R6301    | 4822 116 81062 | 1.8KΩ 1/16W |
| R6302    | 4822 116 81077 | 33Ω 1/16W   |
| R6303    | 4822 116 81085 | 3.9KΩ 1/16W |
| R6304    | 4822 116 81074 | 2.7KΩ 1/16W |
| R6305    | 4822 116 81063 | 18KΩ 1/16W  |
| R6309-11 | 4822 116 81046 | 1KΩ 1/16W   |
| R8001,02 | 4822 116 81047 | 10KΩ 1/16W  |
| R8003    | 4822 116 81089 | 470Ω 1/16W  |
| R8004    | 4822 116 81107 | 820Ω 1/16W  |
| R8005    | 4822 116 81046 | 1KΩ 1/16W   |
| R8006    | 4822 116 81112 | 0Ω 1/16W    |
| R8007    | 4822 116 81095 | 560Ω 1/16W  |
| R8010    | 4822 116 81095 | 560Ω 1/16W  |
| R8017    | 4822 116 81068 | 2.2KΩ 1/16W |
| R8018    | 4822 116 81074 | 2.7KΩ 1/16W |
| R8020,21 | 4822 116 81046 | 1KΩ 1/16W   |
| R8026    | 4822 116 81047 | 10KΩ 1/16W  |
| R8027    | 4822 116 81057 | 15KΩ 1/16W  |
| R8028    | 4822 116 81142 | 8.2KΩ 1/16W |
| R8029    | 4822 116 81057 | 15KΩ 1/16W  |
| R8030,31 | 4822 116 81046 | 1KΩ 1/16W   |
| R8032    | 4822 116 81091 | 4.7KΩ 1/16W |
| R8033    | 4822 116 81085 | 3.9KΩ 1/16W |
| R8034    | 4822 116 81099 | 680Ω 1/16W  |
| R8037    | 4822 100 12143 | 270Ω        |
| R8040    | 4822 116 81046 | 1KΩ 1/16W   |
| R8041    | 4822 116 81108 | 82KΩ 1/16W  |
| R8043,44 | 4822 116 81112 | 0Ω 1/16W    |
| R8046,47 | 4822 116 81047 | 10KΩ 1/16W  |
| R8048    | 4822 100 12143 | 270Ω        |
| R8049    | 4822 117 10136 | 15KΩ        |
| R8050,51 | 4822 116 82345 | 75Ω 1/16W   |
| R8052,53 | 4822 116 81093 | 470KΩ 1/16W |
| R8054    | 4822 116 81078 | 330Ω 1/16W  |
| R8056    | 4822 116 81112 | 0Ω 1/16W    |

### RESISTORS

|          |                |
|----------|----------------|
| RA6001   | 4822 111 92178 |
| RA6003   | 4822 111 92177 |
| RA6004,0 | 4822 111 92097 |
| RA6006   | 4822 111 92177 |
| RA6007   | 4822 111 92097 |
| RA6008-1 | 4822 111 92178 |
| RA6013   | 4822 111 92177 |

### TRANSFORMERS

|       |                |             |
|-------|----------------|-------------|
| T1001 | 4822 148 81354 | TRANSFORMER |
| T1002 | 4822 148 81384 | TRANSFORMER |
| T4001 | 4822 148 81352 | TRANSFORMER |

### THERMISTORS

|       |                |            |
|-------|----------------|------------|
| TH701 | 4822 111 92169 | THERMISTOR |
|-------|----------------|------------|

### VARIABLE RESISTORS

|        |                |
|--------|----------------|
| VR3001 | 4822 101 30779 |
| VR3003 | 4822 101 30783 |

△.....Safety component, use only this type

# REPLACEMENT PARTSLIST M621

## CRYSTALS

|       |                |                    |
|-------|----------------|--------------------|
| X201  | 4822 242 81506 | CRYSTAL OSCILLATOR |
| X301  | 4822 242 81592 | CRYSTAL OSCILLATOR |
| X6001 | 4822 242 81227 | CRYSTAL OSCILLATOR |
| X6002 | 4822 242 81721 | CRYSTAL OSCILLATOR |
| X8001 | 4822 242 81507 | CRYSTAL OSCILLATOR |

## DRIVE C.B.A.

## CAPACITORS

|          |                |          |      |
|----------|----------------|----------|------|
| C2001    | 4822 126 12481 | 0.56μF/  | 16V  |
| C2002    | 4822 126 11731 | 1μF/     | 16V  |
| C2003    | 4822 126 11781 | 3300pF/  | 50V  |
| C2004    | 4822 126 11785 | 47pF/    | 50V  |
| C2005    | 4822 126 12213 | 1500pF/  | 50V  |
| C2006    | 4822 126 11785 | 47pF/    | 50V  |
| C2007    | 4822 126 11731 | 1μF/     | 16V  |
| C2009    | 4822 126 11257 | 0.1μF/   | 16V  |
| C2011    | 4822 126 12211 | 0.022μF/ | 25V  |
| C2012    | 4822 126 12926 | 0.047μF/ | 16V  |
| C2013    | 4822 124 11281 | 10μF/    | 6.3V |
| C2014    | 4822 124 11105 | 4.7μF/   | 10V  |
| C2015-17 | 4822 126 11257 | 0.1μF/   | 16V  |
| C2018    | 4822 124 11281 | 10μF/    | 6.3V |
| C2020-22 | 4822 126 11762 | 0.01μF/  | 50V  |
| C2023    | 4822 124 11281 | 10μF/    | 6.3V |
| C2024    | 4822 126 11762 | 0.01μF/  | 50V  |
| C2025-27 | 4822 126 11748 | 0.1μF/   | 16V  |
| C2028    | 4822 124 11281 | 10μF/    | 6.3V |
| C2029-32 | 4822 126 11763 | 0.01μF/  | 50V  |
| C2033    | 4822 126 12197 | 1.8μF/   | 16V  |
| C2036    | 4822 126 11748 | 0.1μF/   | 16V  |
| C2040-42 | 4822 126 12926 | 0.047μF/ | 16V  |

## CONNECTORS

|        |                |                   |
|--------|----------------|-------------------|
| FP2001 | 4822 267 51185 | CONNECTOR(07 PIN) |
| FP2002 | 4822 267 51296 | CONNECTOR(18 PIN) |
| FP2003 | 4822 267 60368 | CONNECTOR(23 PIN) |

## INTEGRATED CIRCUITS

|          |                |          |
|----------|----------------|----------|
| IC2001   | 4822 209 32797 | TB6513AF |
| IC2002,0 | 4822 209 31425 | UN224    |

## TRANSISTOR RESISTORS

|        |                |        |
|--------|----------------|--------|
| QR2001 | 4822 209 71452 | 0N2170 |
| QR2002 | 4822 130 61061 | UN5215 |

## RESISTORS

|       |                |       |       |
|-------|----------------|-------|-------|
| R2001 | 4822 116 81046 | 1KΩ   | 1/16W |
| R2002 | 4822 116 81071 | 220KΩ | 1/16W |
| R2003 | 4822 116 81068 | 2.2KΩ | 1/16W |
| R2004 | 4822 116 81058 | 150KΩ | 1/16W |
| R2005 | 4822 116 81085 | 3.9KΩ | 1/16W |
| R2006 | 4822 116 81093 | 470KΩ | 1/16W |
| R2007 | 4822 117 10127 | 0.47Ω | 1/8W  |
| R2008 | 4822 116 83291 | 0.33Ω | 1/8W  |
| R2009 | 4822 116 81095 | 560Ω  | 1/16W |
| R2010 | 4822 116 81047 | 10KΩ  | 1/16W |
| R2011 | 4822 051 20271 | 270Ω  | 1/10W |
| R2012 | 4822 116 81103 | 680KΩ | 1/16W |

|          |                |       |       |
|----------|----------------|-------|-------|
| R2013,14 | 4822 116 81046 | 1KΩ   | 1/16W |
| R2015    | 4822 116 81092 | 47KΩ  | 1/16W |
| R2016    | 4822 116 81068 | 2.2KΩ | 1/16W |
| R2017    | 4822 116 81046 | 1KΩ   | 1/16W |
| R2018    | 4822 116 81091 | 4.7KΩ | 1/16W |
| R2019,20 | 4822 116 81089 | 470Ω  | 1/16W |
| R2021    | 4822 051 20101 | 100Ω  | 1/10W |
| R2022    | 4822 116 83291 | 0.33Ω | 1/8W  |
| R2040-42 | 4822 116 81078 | 330Ω  | 1/16W |
| R2045,46 | 4822 116 81092 | 47KΩ  | 1/16W |

## MISCELLANEOUS

|                |                    |
|----------------|--------------------|
| 4822 256 92003 | REEL SENSOR STATOR |
|----------------|--------------------|

## EVF C.B.A.

## CONNECTORS

|       |                |                    |
|-------|----------------|--------------------|
| B1601 | 4822 265 51373 | CONNECTOR (30 PIN) |
|-------|----------------|--------------------|

## CAPACITORS

|         |                |          |      |
|---------|----------------|----------|------|
| C801    | 4822 121 70459 | 0.1μF/   | 16V  |
| C803,04 | 4822 126 10687 | 1μF/     | 16V  |
| C805    | 4822 124 23899 | 220μF/   | 6.3V |
| C806    | 4822 126 12207 | 0.012μF/ | 16V  |
| C807    | 4822 126 11731 | 1μF/     | 16V  |
| C809    | 4822 124 80167 | 47μF/    | 16V  |
| C810    | 4822 126 13167 | 3300pF/  |      |
| C811    | 4822 124 11407 | 47μF/    | 10V  |
| C812    | 4822 126 11769 | 18pF/    | 50V  |
| C813    | 4822 126 13168 | 220pF/   |      |
| C814    | 4822 124 23243 | 1μF/     | 50V  |
| C815    | 4822 126 11802 | 330pF/   | 500V |
| C816    | 4822 122 33749 | 0.1μF/   | 50V  |
| C831    | 4822 122 33749 | 0.1μF/   | 50V  |
| C1603   | 4822 124 23592 | 22μF/    | 10V  |

## DIODES

|          |                |         |
|----------|----------------|---------|
| D803     | 4822 130 83648 | MA142A  |
| D1601    | 4822 130 83498 | SFPB-64 |
| D1602,03 | 4822 130 83404 | MA8130M |

## INTEGRATED CIRCUITS

|       |                |         |
|-------|----------------|---------|
| IC801 | 4822 209 33254 | AN2516S |
|-------|----------------|---------|

## JACKS

|       |                |      |
|-------|----------------|------|
| J1601 | 4822 267 31704 | JACK |
| J1602 | 4822 267 31703 | JACK |

## COILS

|          |                |           |
|----------|----------------|-----------|
| L801     | 4822 157 63471 | coil      |
| L802     | 4822 157 71101 | coil      |
| L804     | 4822 157 71102 | coil 68μH |
| L805     | 4822 157 63942 | coil      |
| L1601,02 | 4822 157 63947 | coil      |

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST M621

### CONNECTORS

|       |                |                  |    |
|-------|----------------|------------------|----|
| P801  | 4822 265 31165 | CONNECTOR (MALE) | 4P |
| P803  | 4822 265 31026 | CONNECTOR (MALE) | 3P |
| P804  | 4822 265 20267 | CONNECTOR (MALE) | 2P |
| P1602 | 4822 265 20608 | CONNECTOR (MALE) | 2P |

### TRANSISTORS

|         |                |           |
|---------|----------------|-----------|
| Q802    | 4822 130 61087 | 2SD968A-S |
| Q803,04 | 4822 130 63342 | 2SA1748   |

### TRANSISTOR RESISTORS

|       |                |         |
|-------|----------------|---------|
| QR881 | 4822 130 62564 | UN9212  |
| QR882 | 4822 130 63055 | UN2130X |

### RESISTORS

|         |                |                     |
|---------|----------------|---------------------|
| R801    | 4822 116 82628 |                     |
| R802    | 4822 116 83272 | 3.9 $\Omega$ 1/10W  |
| R805    | 4822 116 81046 | 1K $\Omega$ 1/16W   |
| R808    | 4822 100 12142 | 2.4K $\Omega$       |
| R809    | 4822 116 81098 | 560K $\Omega$ 1/16W |
| R810    | 4822 117 11084 | 100K $\Omega$ 1/10W |
| R815    | 4822 116 81046 | 1K $\Omega$ 1/16W   |
| R816,17 | 4822 116 81091 | 4.7K $\Omega$ 1/16W |
| R818    | 4822 116 81069 | 22K $\Omega$ 1/16W  |
| R819,20 | 4822 051 20275 | 2.7M $\Omega$ 1/10W |
| R821    | 4822 051 20105 | 1M $\Omega$ 1/10W   |
| R823    | 4822 116 81763 | 8.2 $\Omega$ 1/16W  |
| R829    | 4822 116 83725 |                     |
| R833    | 4822 116 81085 | 3.9K $\Omega$ 1/16W |
| R834    | 4822 116 81052 | 1.2K $\Omega$ 1/16W |
| R835    | 4822 116 81069 | 22K $\Omega$ 1/16W  |
| R840    | 4822 117 11085 | 6.8M $\Omega$ 1/8W  |
| R841,42 | 4822 051 20475 | 4.7M $\Omega$ 1/10W |
| R843    | 4822 116 81098 | 560K $\Omega$ 1/16W |
| R844    | 4822 051 20399 | 39 $\Omega$ 1/10W   |
| R850    | 4822 117 11083 | 8.2K $\Omega$       |
| R851    | 4822 117 11082 | 3.9K $\Omega$       |
| R852    | 4822 051 20822 | 8.2K $\Omega$ 1/10W |
| R853    | 4822 116 81117 | 10K $\Omega$ 1/10W  |
| R854    | 4822 116 81067 | 220 $\Omega$ 1/16W  |
| R855    | 4822 116 81055 | 150 $\Omega$ 1/16W  |
| R883    | 4822 116 81107 | 820 $\Omega$ 1/16W  |
| R890    | 4822 116 81102 | 68K $\Omega$ 1/16W  |
| R899    | 4822 116 81061 | 180 $\Omega$ 1/16W  |
| R1601   | 4822 113 90239 |                     |
| R1606   | 4822 051 20102 | 1K $\Omega$ 1/10W   |

### SWITCHES

|       |                |        |
|-------|----------------|--------|
| SW892 | 4822 276 13456 | SWITCH |
| SW895 | 4822 276 13497 | SWITCH |
| SW896 | 4822 277 21736 | SWITCH |

### TRANSFORMERS

|      |                |             |
|------|----------------|-------------|
| T801 | 4822 146 21779 | TRANSFORMER |
|------|----------------|-------------|

### VARIABLE RESISTORS

|       |                |
|-------|----------------|
| VR801 | 4822 100 30091 |
| VR803 | 4822 101 30787 |

VR804 4822 100 12138

### MISCELLANEOUS

|       |                |            |
|-------|----------------|------------|
| Z1601 | 4822 138 10548 | BATTERY    |
|       | 4822 321 62413 | WIRE CABLE |

## CCD FLEX.CARD C.B.A.

### CONNECTORS

|      |                |                    |
|------|----------------|--------------------|
| B291 | 4822 267 51315 | CONNECTOR (12 PIN) |
|------|----------------|--------------------|

### CAPACITORS

|          |                |                |     |
|----------|----------------|----------------|-----|
| C292     | 4822 124 11329 | 2.2 $\mu$ F/   | 35V |
| C293,C29 | 4822 122 33672 | 0.047 $\mu$ F/ | 25V |
| C295     | 4822 122 33731 | 0.1 $\mu$ F/   | 25V |

### DIODES

|      |                |       |
|------|----------------|-------|
| D291 | 4822 130 32868 | MA153 |
|------|----------------|-------|

### TRANSISTORS

|      |                |         |
|------|----------------|---------|
| Q291 | 4822 130 61593 | 2SC2295 |
|------|----------------|---------|

### RESISTORS

|      |                |                     |
|------|----------------|---------------------|
| R291 | 4822 117 10749 | 56 $\Omega$ 1/16W   |
| R292 | 4822 116 81114 | 4.7K $\Omega$ 1/16W |
| W291 | 4822 116 81147 |                     |

### MISCELLANEOUS

4822 466 10645 FLEX. CARD

## LENS FLEX. CARD C.B.A.

### MISCELLANEOUS

4822 130 83405 PHOTO SENSOR

## MIC UNIT

### CAPACITORS

|          |                |                |     |
|----------|----------------|----------------|-----|
| C4302    | 4822 126 13166 | 0.015 $\mu$ F/ | 25V |
| C4305    | 4822 122 33735 | 0.027 $\mu$ F/ | 50V |
| C4308    | 5322 122 34123 | 1000pF/        | 50V |
| C4309,10 | 4822 122 33735 | 0.027 $\mu$ F/ | 50V |

### DIODES

|       |                |        |
|-------|----------------|--------|
| D4301 | 4822 130 82717 | RD5.6M |
|-------|----------------|--------|

$\Delta$ .....Safety component, use only this type

## REPLACEMENT PARTSLIST M621

### CONNECTORS

P4301 4822 265 31148 CONNECTOR (MALE) 3P

### TRANSISTORS

Q4302 4822 130 62581 2SC2405  
Q4303 4822 130 42671 2SD601A

### RESISTORS

R4302 4822 051 20222 2.2K $\Omega$  1/10W  
R4309 4822 051 20224 220K $\Omega$  1/10W  
R4310 4822 051 20334 330K $\Omega$  1/10W  
R4311 4822 051 20822 8.2K $\Omega$  1/10W  
R4312 4822 051 20102 1K $\Omega$  1/10W  
R4313,14 4822 051 20683 68K $\Omega$  1/10W  
R4315 4822 051 20183 18K $\Omega$  1/10W  
R4316 4822 051 20332 3.3K $\Omega$  1/10W

## FRONT OPERATION C.B.A.

### DIODES

D501 5322 130 81026 PH310-1

### CONNECTORS

P052 4822 265 41389 CONNECTOR (MALE) 7P

### SWITCHES

SW501 4822 276 13342 SWITCH

### VARIABLE RESISTORS

VR501 4822 100 12072

### MISCELLANEOUS

4822 321 62412 WIRE CABLE

## AV JACK C.B.A.

### CONNECTORS

B1501 4822 267 51303 CONNECTOR (10 PIN)

### CAPACITORS

C1502 4822 126 10694 0.01 $\mu$ F/ 50V  
C1503 4822 126 10687 1 $\mu$ F/ 16V

### COILS

L1503 4822 157 70987 coil  
L1504,05 4822 157 70257 coil

### MISCELLANEOUS

4822 290 81608 AV JACK PLATE  
4822 492 71506 EARTH PLATE

## S/S C.B.A.

### CONNECTORS

PJ6701 4822 265 30928 CONNECTOR (MALE) 3P

### CAPACITOR

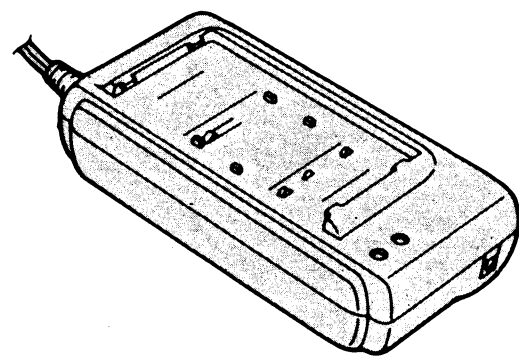
S6702 4822 276 13418 CAPACITOR

### MISCELLANEOUS

4822 321 62411 WIRE CABLE

POWER SUPPLY / CHARGER

22AV5226



SPECIFICATIONS

| ITEM      | SPECIFICATION                                                                       |
|-----------|-------------------------------------------------------------------------------------|
| POWER     | Source: AC 100~240V, 50/60Hz<br>(Automatic Voltage Adjustment)                      |
|           | Consumption: Approx. 18W                                                            |
|           | Output: DC 6V, 7W (Movie Camera Operation)<br>DC 4.8V, 0.8A (Battery Pack Charging) |
| DIMENSINS | 72(W)×99(H)×143(D)mm                                                                |
| WEIGHT    | Approx. 210g (Without AC Cable)                                                     |

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.

DISASSEMBLY PROCEDURES

- (1) Remove the Top Case.
- 1. Remove the 2 screws.
  - 2. Unlock the 4 Locking Portions.
  - 3. Remove the Top Case.

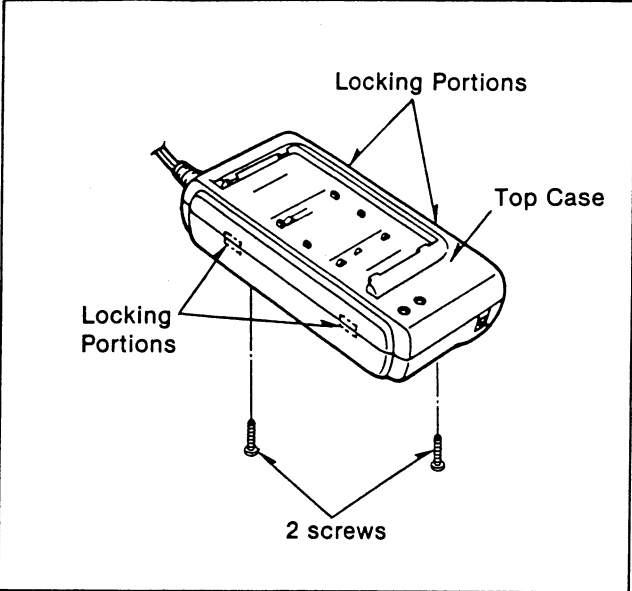


Fig. D1

**NOTE 1:** WHEN MEASURE THE DC VOLTAGE AND WAVEFORM. CONNECT THE GND READ OR GND PROBE TO NEXT GND.  
PRIMARY SIDE: ..... (3) PIN OF THE CONTROL C.B.A. (PRIMARY GND).  
SECONDARY SIDE: ..... (8) PIN OF THE CONTROL C.B.A. (SECONDARY GND).

**NOTE 2:** THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS MEASURED WHEN INPUT AC 220V IS APPLIED.

**NOTE 3:** WHEN MEASURE THE DC VOLTAGE, CONNECT THE MOVIE TO DC OUTPUT

**NOTE:** DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

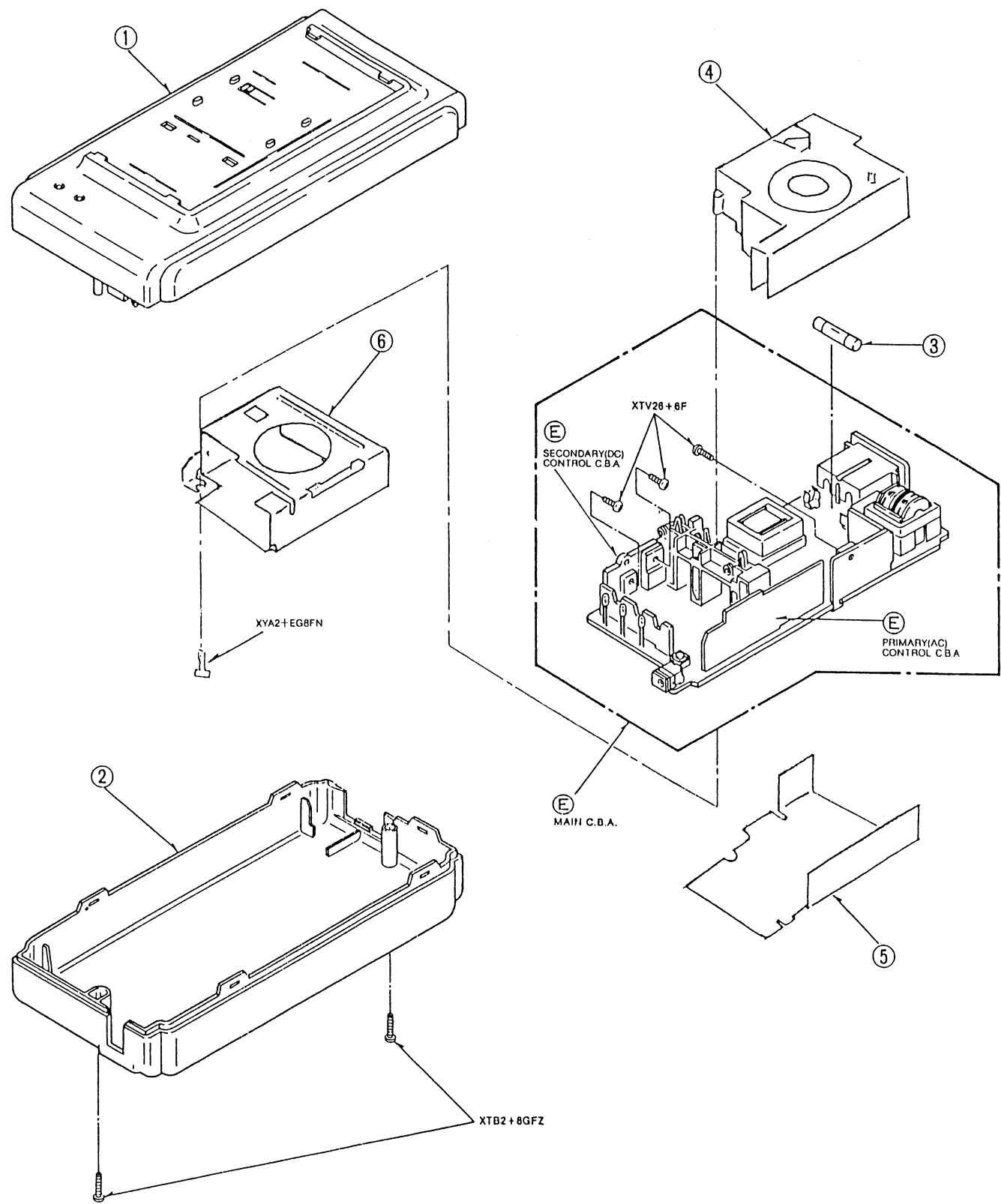
**IMPORTANT SAFETY NOTICE:**  
COMPONENTS IDENTIFIED WITH THE MARK HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY THESE COMPONENTS, USE ONLY THE SAME TYPE.

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6. EXPLODED VIEW



Back Page:  
SECONDARY (DC) CONTROL &  
PRIMARY (AC) CONTROL &  
MAIN

REPLACEMENT PARTSLIST 22AV5226

MECHANICAL PARTS

|      |                |                      |
|------|----------------|----------------------|
| 1(1) | 4822 432 60869 | TOP CASE UNIT        |
| 2(1) | 4822 432 60855 | BOTTOM CASE          |
| 3(1) | 4822 252 20188 | FUSE 250V/1.0A       |
| 4(1) | 4822 466 93349 | BARRIER (UPPER)      |
| 5(1) | 4822 466 93351 | BARRIER (LOWER)      |
| 6(1) | 4822 432 60868 | SHIELD CASE          |
|      | 4822 691 20848 | BATTERY CATCHER UNIT |

MAIN C.B.A.

CAPACITORS

|         |                |          |      |
|---------|----------------|----------|------|
| C01     | 4822 124 80859 | 0.047μF/ | 100V |
| C02-05  | 4822 126 12757 | 3300pF/  |      |
| C06     | 4822 124 80858 | 33μF/    | 400V |
| C07     | 4822 121 70468 | 0.047μF/ | 250V |
| C08     | 4822 126 10008 | 100pF/   | 500V |
| C21     | 4822 126 13182 | 680pF/   | 35V  |
| C22     | 4822 124 80857 | 470μF/   | 16V  |
| C23     | 5322 124 41942 | 33μF/    | 25V  |
| C24     | 4822 124 22833 | 10μF/    | 50V  |
| C25,26  | 4822 126 12175 | 2200pF/  | 500V |
| C27     | 4822 124 21536 | 2.2μF/   | 50V  |
| C28-30  | 4822 124 23912 | 0.1μF/   | 50V  |
| C101    | 4822 126 11257 | 0.1μF/   | 16V  |
| C102    | 4822 126 13181 | 820pF/   | 50V  |
| C103    | 4822 126 11257 | 0.1μF/   | 16V  |
| C104    | 4822 126 11731 | 1μF/     | 16V  |
| C105    | 4822 126 11732 | 0.22μF/  | 16V  |
| C106    | 4822 122 33496 | 0.1μF/   | 50V  |
| C107    | 5322 126 10794 | 220pF/   | 50V  |
| C201    | 4822 126 11731 | 1μF/     | 16V  |
| C202    | 4822 126 11257 | 0.1μF/   | 16V  |
| C203    | 4822 126 11748 | 0.1μF/   | 16V  |
| C204    | 4822 122 33777 | 470pF/   | 50V  |
| C205    | 4822 126 11748 | 0.1μF/   | 16V  |
| C206    | 4822 122 33777 | 470pF/   | 50V  |
| C207    | 4822 126 11748 | 0.1μF/   | 16V  |
| C209    | 4822 126 11748 | 0.1μF/   | 16V  |
| C212,13 | 4822 126 11748 | 0.1μF/   | 16V  |

DIODES

|        |                |          |
|--------|----------------|----------|
| D01    | 4822 130 83027 | S1WBA60S |
| D02    | 4822 130 80701 | ERA22-08 |
| D03    | 4822 130 81256 | ERA22-04 |
| D21    | 4822 130 83655 | RL4ZPLF  |
| D22    | 4822 130 81256 | ERA22-04 |
| D23,24 | 4822 130 82733 | MA165VT  |
| D25    | 4822 209 32467 | LN38GCPX |
| D26    | 4822 209 32466 | LN28RCPX |
| D27    | 4822 130 82733 | MA165VT  |
| D28    | 4822 130 82451 | MA4062L  |
| D101   | 4822 130 83654 | MA3220H  |
| D201   | 4822 130 80376 | MA141WA  |
| D202   | 4822 130 80289 | MA141WK  |

JACKS

|      |                |      |
|------|----------------|------|
| DC01 | 4822 267 31484 | JACK |
|------|----------------|------|

FILTERS

|      |                |            |
|------|----------------|------------|
| FL01 | 4822 157 71132 | ELF18D293J |
|------|----------------|------------|

INTEGRATED CIRCUITS

|       |                |              |
|-------|----------------|--------------|
| IC21  | 4822 209 73394 | UPC78L05J    |
| IC100 | 4822 209 33261 | MY1003       |
| IC201 | 4822 209 63526 | LM324DB      |
| IC203 | 4822 209 33341 | M50729-275ET |

COILS

|     |                |      |
|-----|----------------|------|
| L21 | 4822 157 71133 | coil |
|-----|----------------|------|

CONNECTORS

|     |                |           |
|-----|----------------|-----------|
| P01 | 4822 267 41096 | CONNECTOR |
|-----|----------------|-----------|

TRANSISTORS

|      |                |                          |
|------|----------------|--------------------------|
| Q21  | 4822 130 63347 | 2SA1897                  |
| PS01 | 4822 130 83425 | TRANSISTOR-PHOTO COUPLER |

TRANSISTOR RESISTORS

|       |                |        |
|-------|----------------|--------|
| QR201 | 4822 111 91224 | UN2211 |
| QR202 | 4822 130 63183 | UN5114 |

RESISTORS

|         |                |       |       |
|---------|----------------|-------|-------|
| R01     | 4822 117 11114 | 68KΩ  | 1W    |
| R02     | 4822 116 52195 | 47Ω   | 1/4W  |
| R03     | 4822 116 52256 | 2.2KΩ | 1/4W  |
| R21     | 4822 116 83731 | 22Ω   | 1W    |
| R22-24  | 4822 116 83749 | 680Ω  | 1/4W  |
| R25     | 4822 116 60555 | 120Ω  | 1W    |
| R26     | 4822 116 52206 | 120Ω  | 1/4W  |
| R27     | 4822 117 11124 | 0.10Ω | 1W    |
| R28     | 4822 116 52257 | 22KΩ  | 1/4W  |
| R29     | 4822 050 11002 | 1KΩ   | 1/4W  |
| R30     | 4822 116 52257 | 22KΩ  | 1/4W  |
| R31     | 4822 116 52234 | 100KΩ | 1/4W  |
| R32     | 4822 116 52206 | 120Ω  | 1/4W  |
| R33     | 4822 116 52283 | 4.7KΩ | 1/4W  |
| R101    | 4822 051 20229 | 22Ω   | 1/10W |
| R102    | 4822 051 20101 | 100Ω  | 1/10W |
| R103    | 4822 117 11115 | 1KΩ   | 1/4W  |
| R104    | 4822 051 20133 | 13KΩ  | 1/10W |
| R105    | 4822 051 20203 | 20KΩ  | 1/10W |
| R106-08 | 4822 051 10106 | 10MΩ  | 1/8W  |
| R109    | 4822 051 10008 | 0Ω    | 1/8W  |
| R202    | 4822 117 11122 | 51KΩ  | 1/16W |
| R203    | 4822 116 82495 | 39KΩ  | 1/16W |
| R204    | 4822 051 30223 | 22KΩ  | 1/16W |
| R205    | 4822 117 11119 | 33KΩ  | 1/16W |
| R206    | 4822 117 11123 | 75KΩ  | 1/16W |
| R207,08 | 4822 117 11118 | 180KΩ | 1/16W |
| R209    | 4822 116 82792 | 5.6KΩ | 1/16W |
| R210    | 4822 117 11118 | 180KΩ | 1/16W |
| R211    | 4822 117 10804 | 130KΩ | 1/16W |
| R212    | 4822 117 11116 | 120KΩ | 1/16W |
| R213    | 4822 117 11117 | 150KΩ | 1/16W |
| R214    | 4822 051 30163 | 16KΩ  | 1/16W |
| R215    | 4822 116 81095 | 560Ω  | 1/16W |
| R216    | 4822 116 81046 | 1KΩ   | 1/16W |
| R217    | 4822 117 11121 | 430Ω  | 1/16W |
| R218,19 | 4822 116 82575 | 3.3KΩ | 1/16W |
| R220    | 4822 116 81069 | 22KΩ  | 1/16W |
| R221    | 4822 116 81096 | 5.6KΩ | 1/16W |

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST 22AV5226

|         |                |             |
|---------|----------------|-------------|
| R222    | 4822 116 81078 | 330Ω 1/16W  |
| R223-25 | 4822 116 81091 | 4.7KΩ 1/16W |
| R226    | 4822 116 81081 | 33KΩ 1/16W  |
| R227    | 4822 116 81069 | 22KΩ 1/16W  |
| R229    | 4822 116 81091 | 4.7KΩ 1/16W |
| R231    | 4822 116 81091 | 4.7KΩ 1/16W |
| R231    | 4822 116 81091 | 4.7KΩ 1/16W |

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### TRANSFORMERS

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|     |                |             |
|-----|----------------|-------------|
| T01 | 4822 148 81383 | TRANSFORMER |
|-----|----------------|-------------|

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### CRYSTALS

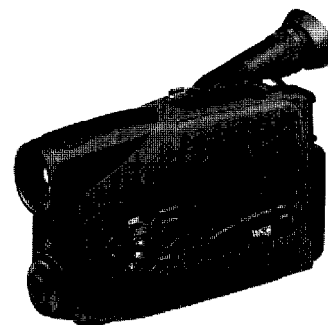
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|      |                                                                                                  |                    |
|------|--------------------------------------------------------------------------------------------------|--------------------|
| X21  | 4822 242 81214                                                                                   | CRYSTAL OSCILLATOR |
| ZR01 |  4822 116 21223 | SURGE ABSORBER     |

.....Safety component, use only this type

# Service Service Service

## E.V.R. ADJUSTMENTS FOR M621/01 M622/01



# Service Manual

THIS SERVICE MANUAL CONTAINS THE E.V.R ADJUSTMENT PROCEDURE FOR M621/21 and M622/21.

PLEASE USE THIS SERVICE MANUAL TOGETHER WITH THE SERVICE MANUAL  
for M621/21 (4822 726 15093) or M622/21 (4822 726 15106).

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| 2. E.V.R and new EEPROM description                           | 5-13. Colour phase and gain adjustment (indoor)              |
| 2-1. General description                                      | 5-14. Outdoor white balance adjustment                       |
| 2-2. Macro operation                                          | 5-15. Colour phase and gain adjustment (outdoor)             |
| 2-3. Error indication                                         | 5-16. Data writing for colour reproduction and white balance |
| 3. Component replacement and adjustment                       | 6. E.V.R. adjustment for VTR section                         |
| 4. Assistance of adjustment requirement                       | 6-1. PD shifter adjustment                                   |
| 5. E.V.R adjustment for camera section                        | 6-2. Recording current adjustment (Y/C)                      |
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| 5-11. VTR carrier balance adjustment                          |                                                              |

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

## INTRODUCTION

This Manual contains adjustment procedure for using E.V.R. which will allow service personnels to understand adjustment for using E.V.R. of each model M621/21, M622/21

Following Item described on each service manual depends on the models.

| Model No. | Order No.      | Description                                                                                                                                                                                                                                                                  |
|-----------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M621/21   | 4822 726 15093 | SECTION 1:General Description.<br>SECTION 2:Adjustment Procedures. ① Disassembly/assembly procedures.<br>② Adjustment for Mechanism.<br>③ Electric Adjutment for VCR section.<br>SECTION 3:Block Diagram and Schematic Dirgrams.<br>SECTION 4:Exploded Views and Parts List. |
| M622/21   | 4822 726 15106 | This service manual is based on M621/21<br>Therefore please refer to the descriptions on 4822 726 15093                                                                                                                                                                      |

## CROSS-REFERENCE LIST

### FACTORY CODE - SERVICE CODE

| Description                | Factory code | Service code    |
|----------------------------|--------------|-----------------|
| Flat cable 16 pin          | VFK0727      | 4822 321 61797  |
| Flat cable 9 pin           | VFK0728      | 4822 321 61798  |
| Flat cable 6 pin           | VFK0729      | 4822 321 61799  |
| Extension cable 30 pin     | VFK0839      | 4822 321 62414  |
| Flat cable 23 pin          | VFK0896      | 4822 321 622131 |
| Flat cable 18 pin          | VFK0913      | 4822 321 62216  |
| Flat cable 12 pin          | VFK0929      | 4822 321 62236  |
| EVR Fixture                | VFK0644      | 4822 321 61054  |
| EVR connecting cable 5 pin | VFK0766A     | 4822 321 61621  |
| EVR test cable 24 pin      | VFK0734W     | 4822 321 61617  |
| Rom 22                     | VFK0701ROM22 | 4822 209 33292  |
| Aligment tape              | VFM8180HUPF  | 4822 397 30186  |
| Hunting chart              | VFK0546      | 4822 397 30209  |
| J chart & Ball chart       | VFK0580      | 4822 397 30222  |
| Colour bar chart           | VFK0677      | 4822 397 30215  |
| Conversion filter C12      | VFK0374      | 4822 397 60152  |
| Conversion filter C12      | VFK0713      | 4822 480 50474  |
| Conversion filter C02      | VFK0375      | 4822 397 60153  |
| Conversion Filter C02      | VFK0716      | 4822 480 50476  |

In the Service manual mostly the Factory codes are mentioned in the text pages.

In case you need such a mentioned Service item please use this cross reference list and order with the Service code.

# 1. SETUP FOR ADJUSTMENT

The standard setting and preparation for camera adjustment is as shown below.

- 1). Prepare the test equipment and tools for Camera unit adjustment.
- 2). Remove the side case (L) referring disassembly method. (See Service Manual.)  
M621/21 4822 726 15093.
- 3). Put the ROM IC (VFK0701ROM22) on the EVR fixture
- 4). Connect the E.V.R. Fixture and equipments as shown in Fig.C1.
- 5). Set the mode select switch on E.V.R. fixture to "A" .
- 6). Turn on the Movie Camera Power SW.

- 7). Turn on the E.V.R. Fixture Power SW.

The LED display on E.V.R. Fixture will indicate "08.80.00".

(If not, push the Reset button and/or check the cable connections between E.V.R./camera cable connections.

If an error is occurs, see next page at "Error Indication" part.)

- 8). Set the AE Dial to "MANUAL".
- 9). Use 3100 degrees kelvin light source for lighting.
- 10). To trigger the oscilloscope, use Video Out.
- 11). Service work for camera unit must be performed in a dust free location to maintain the lens cleanliness.

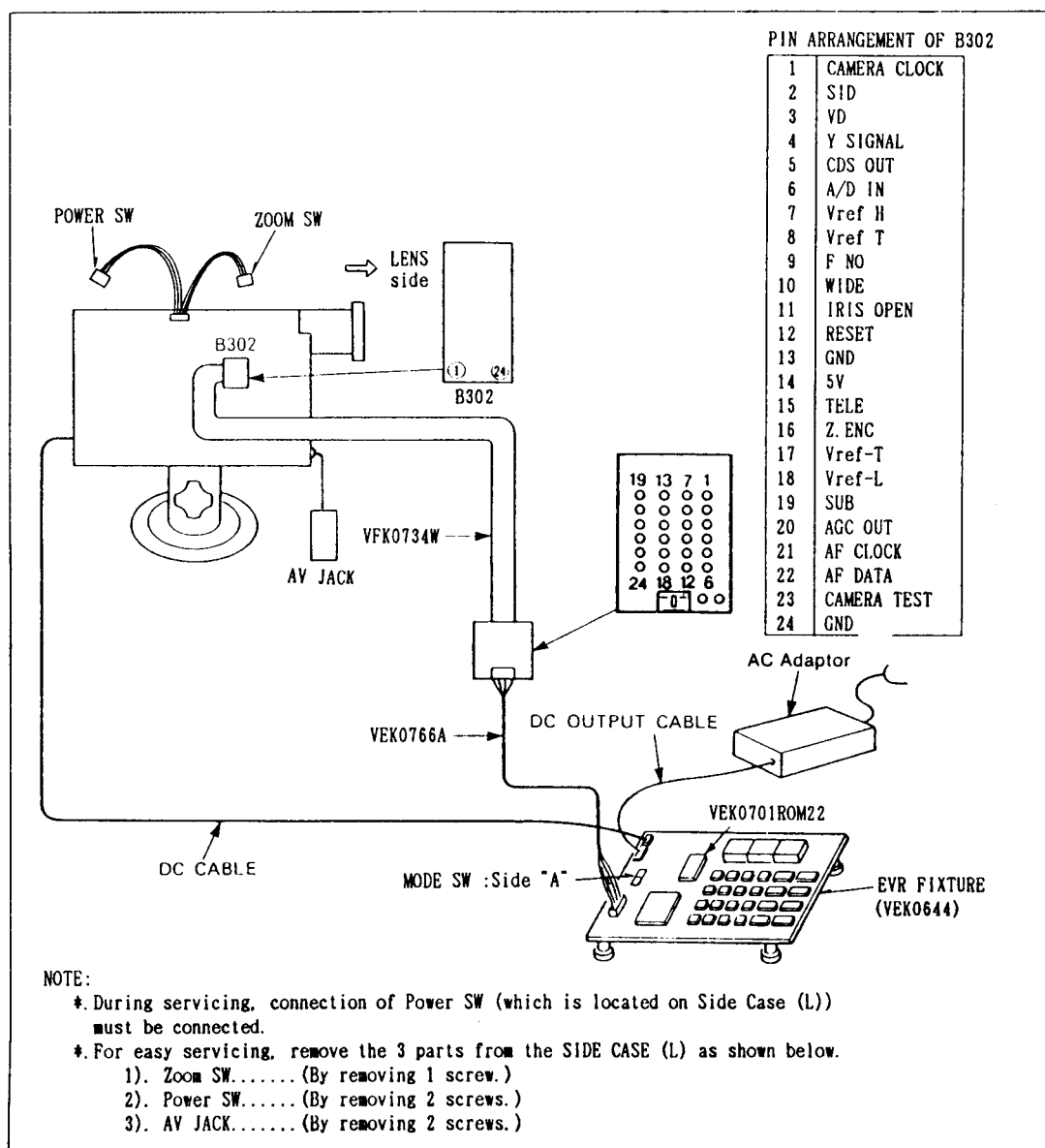


Fig.C1

## 2. E. V. R. & NEW EEPROM DESCRIPTION

### 2-1. GENERAL DESCRIPTION

The new ROM IC VFK0701ROM22 was developed.  
Effective model is M621, M622.

For more detail, see "SECTION 7 ADDITIONAL USES  
FOR E. V. R." section.

### 2-2. MACRO OPERATION.

The following operation is provided to transfer the data by one touch.

Buttons to be pushed at the same time.

| No. | Buttons to be pushed<br>[Push these together] | OPERATIONS                                                                   |
|-----|-----------------------------------------------|------------------------------------------------------------------------------|
| 1   | [SHIFT 1] + [0]                               | Fully opens the IRIS.                                                        |
| 2   | [SHIFT 1] + [1]                               | Fully closes the IRIS.                                                       |
| 3   | [SHIFT 1] + [2]                               | IRIS is turned to Manual Condition.                                          |
| 4   | [SHIFT 1] + [3]                               | IRIS is turned to Original Condition. (AUTO)                                 |
| 5   | [SHIFT 1] + [4]                               | WHITE set.                                                                   |
| 6   | [SHIFT 1] + [5]                               | Zooms to "WIDE" position.                                                    |
| 7   | [SHIFT 1] + [6]                               | Stops the Zoom.                                                              |
| 8   | [SHIFT 1] + [7]                               | Zooms to "TELE" position.                                                    |
| 9   | [SHIFT 1] + [9]                               | Minimizes AGC Gain.                                                          |
| 10  | [SHIFT 1] + [A]                               | Maximizes AGC Gain.                                                          |
| 11  | [SHIFT 1] + [B]                               | AGC is returned to Original condition.                                       |
| 12  | [SHIFT 1] + [C]                               | Focuses to "MANUAL" Condition.                                               |
| 13  | [SHIFT 1] + [D]                               | Focuses to "AUTO" Condition.                                                 |
| 14  | [SHIFT 1] + [E]                               | Zoom tracking data writing.                                                  |
| 15  | [SHIFT 2] + [0]                               | Turns FADE ON. (BLACK FADE).                                                 |
| 16  | [SHIFT 2] + [1]                               | Turns FADE OFF.                                                              |
| 17  | [SHIFT 2] + [4]                               | Turns FADE ON. (WHITE FADE)                                                  |
| 18  | [SHIFT 2] + [5]                               | Focus limit. (focus lens stop)                                               |
| 19  | [SHIFT 2] + [7]                               | Zoom speed calculation                                                       |
| 20  | [SHIFT 2] + [8]                               | Focuses fully "+" Condition.                                                 |
| 21  | [SHIFT 2] + [9]                               | Focuses fully "-" Condition.                                                 |
| 22  | [SHIFT 2] + [A]                               | Automatically calculates colour detection and writes the data to the EEPROM. |
| 23  | [SHIFT 2] + [C]                               | Writes the fixed data and all average data to the EEPROM for M622/21         |
|     |                                               |                                                                              |
| 25  | [SHIFT 2] + [E]                               | Writes the fixed data and all average data to the EEPROM for M621/21         |
|     |                                               |                                                                              |

Fig. C2

### 2-3. ERROR INDICATION

If an error occurs while E. V. R. fixture is operating  
display one of the error messages listed in Fig. C3

| Error NO. | Contents of Error                           | Simple checking method        |
|-----------|---------------------------------------------|-------------------------------|
| 1         | Set the command number                      |                               |
| 2         | Set the wrong Address number                |                               |
| 3         | VD signal from camera is not coming.        | TP lead wire may be cut       |
| 4~6       | Detect the error during communication       | TP lead wire may be cut       |
| 7         | Writing error in the EEPROM of camera.      | Command or address cure wrong |
| 8         | Communication error in the EEPROM of camera | Same as above                 |

Fig. C3

### 3. COMPONENT REPLACEMENT AND ADJUSTMENT REQUIREMENT

When you replace following components, each adjustment are required as shown below.

| Component               | Adjustment Required                                                                              | Page         |
|-------------------------|--------------------------------------------------------------------------------------------------|--------------|
| MAIN C. B. A.           | Writes all fixed & average data with Macro operation.<br>Then check all adjustment if necessary. | Page 2       |
| IC309(EEPROM)           |                                                                                                  | (See Fig.C2) |
| CCD UNIT                | White Balance & Colour Phase/Gain Adjustment                                                     | Page 11~14   |
|                         | Colour reproduction(Macro operation)                                                             | Page 2       |
|                         | Focus & Zoom Encoder Adjustment                                                                  | Page 5       |
| LENS UNIT               | Focus & Zoom Encoder Adjustment                                                                  | Page 5       |
| FOCUS ENCORDER C. B. A. |                                                                                                  |              |

Fig.C4

#### NOTE :

- (1). When replacing the MAIN C.B.A. or IC309(EEPROM), Fixed & Average data must be written macro operation first, if not, Movie Camera will not work correctly when all adjustments are finished.

### 4. ASSISTANCE OF ADJUSTMENT REQUIREMENT

When replacing the MAIN C.B.A. or IC309(EEPROM), all adjustment items must be checked.

If necessary adjustment are required after Fixed & Average data are stored with macro operation..

Each adjustment is important. No-adjust or miss-adjustment will cause problems.

As reference, see following table.

| Symptom                           | Description                                                           | Adjustment Required                                   | Page    |
|-----------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------|---------|
| *. POOR FOCUSING                  | •Focus hunting or focus stops                                         | •HALL AMP ADJ.                                        | Page 4  |
|                                   | •Lens does not focus through full zoom range                          | •FOCUS & ZOOM ENCORDER ADJUSTMENT                     | Page 5  |
|                                   | •Lens does not focus while zooming.                                   | •ZOOM SPEED ADJUSTMENT                                | Page 7  |
| *. PICTURE BLIGHTNESS (SHOOTING)  | •Picture is too dark or too blight                                    | •PWM ADJUSTMENT                                       | Page 4  |
|                                   |                                                                       | •HALL AMP ADJUSTMENT                                  | Page 4  |
|                                   |                                                                       | •AGC ADJUSTMENT                                       | Page 8  |
|                                   |                                                                       | •ALC ADJUSTMENT                                       | Page 10 |
|                                   |                                                                       | •PEDESTAL LEVEL ADJUSTMENT                            | Page 8  |
|                                   |                                                                       | •A/D INPUT LEVEL ADJUSTMENT                           | Page 9  |
| *. PICTURE POOR COLOUR (SHOOTING) | •Picture is Reddish or Bluish                                         | •PEDESTAL LEVEL ADJUSTMENT                            | Page 8  |
|                                   | •Red or Blue colour shift. (Seen on the monitor or with vectorscope.) | •VTR CARRIER BALANCE ADJUSTMENT                       | Page 10 |
|                                   | •If there is a picture but wrong colour or intensity level.           | •WHITE BALANCE ADJUSTMENT(IN/OUT DOOR)                | Page 11 |
|                                   |                                                                       | •AUTO CALCULATION FOR COLOUR REPRODUCTION & DETECTION | Page 14 |
| *. REC./PLAYBACK PICTURE          | •Weak picture colour Record.                                          | •RECORDING CURRENT (CHROMINANCE) ADJUSTMENT           | Page 18 |
|                                   | •Beat seen in the picture.                                            |                                                       |         |
|                                   | •S/N ration is low.                                                   | •RECORDING CURRENT (LUMINANCE) ADJUSTMENT             | Page 18 |
|                                   | •Video signal overload (saturation)                                   |                                                       |         |
|                                   | •Head Switching Noise and or Vertical Jitter in the picture.          | •PG SHIFTER ADJUSTMENT                                | Page 18 |

Fig.C5

# 5. E. V. R. ADJUSTMENT FOR CAMERA SECTION

## NOTE:

- \*.Begin all adjustment steps from the setup settings  
After each adjustment return the EVR and camera to the setup settings.

To adjust or program the EEPROM manually perform the adjustment steps in the order as follows.

- \*.During adjustment, "B302" located on the MAIN C.B.A. is connected with "VFK0734W" (Connecting cable).  
In the Adjustment Procedure, B302 means VFK0734W.

## 5-1. HALL-AMP ADJUSTMENT

| CMD                                      | ADDRESS  |                     | CHART               | M. EQ   |
|------------------------------------------|----------|---------------------|---------------------|---------|
|                                          | RAM      | E <sup>2</sup> PROM |                     |         |
| 18                                       | B3<br>B4 | _____               | _____               | D. V. M |
| 02                                       | _____    | A6(L)               |                     |         |
| 12                                       |          | A7(H)               |                     |         |
| SPEC                                     |          |                     | TP                  |         |
| ①VOLTAGE AT B302-9 =<br>(B302-18) ± 10mV |          |                     | B302-9 (VFK0734W-9) |         |
| ②VOLTAGE AT B302-9 =<br>(B302-7) ± 30mV  |          |                     |                     |         |

## <Preparation 1>

1. Connect the jumper wire:  
B302-11 and GND....[IRIS close]  
(Do not use EVR for IRIS close)
2. Connect the D.V.M. at B302-18.
3. Make note voltage at B302-18.
4. Connect the D.V.M. at B302-9.

## <Adjustment-1(BIAS)>

5. \* (CMD), (1), (8).  
\* (ADR), (B), (3).
6. Push (INC) or (DEC) keys.  
Spec.:  
Voltage level at B302-9 = B302-18 ± 10mV.

## <Data-Writing for Adjustment-1>

7. \* (CMD), (0), (2).  
\* (ADR), (A), (6).  
\* (SET).
- \*Remove the jumper wire.

## <Preparation 2>

8. Connect the jumper wire:  
B302-11 and B302-14...[IRIS open.]  
(Do not use EVR for IRIS open)
9. Connect the D.V.M. at B302-7.
10. Make note voltage at B302-7.
11. Connect the D.V.M. at B302-9.

## <Adjustment-2(GAIN)>

12. \* (CMD), (1), (8).  
\* (ADR), (B), (4).
13. Push (INC) or (DEC) keys.  
Spec.:  
Voltage level at B302-9 = B302-7 ± 30mV.

## <Data-Writing for Adjustment-2>

14. \* (CMD), (1), (2).  
\* (ADR), (A), (7).  
\* (SET).
- \*Remove the jumper wire.

## 5-2. PWM ADJUSTMENT

| CMD                                          | ADDRESS |                     | CHART               | M. EQ   |
|----------------------------------------------|---------|---------------------|---------------------|---------|
|                                              | RAM     | E <sup>2</sup> PROM |                     |         |
| 18                                           | B5      | _____               | _____               | D. V. M |
| 02                                           | _____   | A7(L)               |                     |         |
| SPEC                                         |         |                     | TP                  |         |
| VOLTAGE AT B302-9=<br>(B302-7 - 80mV) ± 20mV |         |                     | B302-9 (VFK0734W-9) |         |

## <Preparation 1>

1. Push [SHIFT 1 + 0] keys..... [Iris OPEN]
2. Connect the D.V.M. at B302-7.
3. Make note voltage at B302-7.
4. Connect the D.V.M. at B302-9.

## <Preset>

5. \* (CMD), (1), (8).  
\* (ADR), (B), (5).
6. Push (INC) or (DEC) keys.  
Spec.:  
The Voltage Level at B302-9 =  
(B302-7 - 500mV) ± 50mV.
7. Push [SHIFT 1 + 1] keys..... [Iris close.]
8. Push [SHIFT 1 + 0] keys..... [Iris open.]

----- See Next Page -----



# <Adjustment>

9. \* [CMD], (1), (8).

\* [ADR], (B), (5).

10. Push [INC] or [DEC] keys.

Spec.:

The Voltage Level at B302-9 =

(B302-7 - 80mV) ± 20mV.

# <Data-Writing>

11. \* [CMD], (0), (2).

\* [ADR], (A), (7).

\* [SET].

12. Push [SHIFT 1 + 3] keys..... [Iris Auto.]

## 5-3. ZOOM ENCODER & FOCUS ENCODER (FREE ADDRESS) ADJUSTMENT

| CMD              | ADDRESS  |                     | CHART                                                                 | M. EQ   |
|------------------|----------|---------------------|-----------------------------------------------------------------------|---------|
|                  | RAM      | E <sup>2</sup> PROM |                                                                       |         |
| 18               | B2<br>B1 | ——                  | Hunting<br>Chart                                                      | D. V. M |
| 12               |          | A6(H):TELE          | (Distance                                                             |         |
| 02               | ——       | A5(L):WIDE          | 1m from                                                               |         |
| 12               |          | B0(H):Free          | Lens)                                                                 |         |
| SPEC             |          |                     | TP                                                                    |         |
| To be calculated |          |                     | B302-8 (VFK0734W-8)<br>(Vref(+))<br>B302-17(VFK0734W-17)<br>(Vref(-)) |         |

# <Initial Measurement 1>

1. Check the voltage at following points before replaced lens unit.

Example

B302-17 (Vref(-)) : 1.152V

B302-8 (Vref(+)) : 3.520V

2. Make note the potential difference between B302-8 and B302-17.

Example:

(B302-8) — (B302-17) =

3.520 — 1.152 = 2.368V..... Voltage(A)

# <Initial Measurement 2>

3. For your reference, read out and make note the original data for each Encoder data from EEPROM.

|                     | CMD      | ADDRESS  |       | DATA MEMO       |
|---------------------|----------|----------|-------|-----------------|
| ZOOM ENC<br>TELE    | (1), (4) | (A), (6) | [SET] | Example<br>"46" |
| ZOOM ENC<br>WIDE    | (0), (4) | (A), (5) | [SET] | Example<br>"B4" |
| FOCUS ENC<br>(FREE) | (1), (4) | (B), (0) | [SET] | Example<br>"F8" |

4. Turn off the Power SW, replace lens unit.

5. Turn on the Power SW.

# <Data Writing for Zoom.ENC Tracking data>

6. Push the [SHIFT 1 + E] keys... [Zoom ENC. Tracking]

# <Preparation for TELE>

7. Aim the Hunting Chart from a dsiatance of 1m.

8. Push the [SHIFT 1 + 7] keys..... [Zoom to TELE.]

9. Push the [SHIFT 1 + C] keys..... [Manual Focus.]

10. Push the [SHIFT 2 + 9] keys.... [Focus (-) side].

(Wait few seconds until the picture focus does not change.)

11. Push the [SHIFT 2 + 5] keys... [Focus limit]

# <Adjustment for TELE side>

12. \* [CMD], (1), (8)

\* [ADR], (B), (2)

\* Push both [INC] then [DEC] keys.

\* Push [SHIFT 1 + 5] and [SHIFT 1 + 7] keys.

(Zoom to "WIDE") (Zoom to "TELE")

Note: The focus does not change while focus voltage is being adjusted on the E.V.R. So, lens unit must be zoomed from TELE to WIDE and back to the TELE position.

Spec.: Just in focus

\* Just in focus..... [Go to step "13".]

\* Out of focus ..... [Go to step "25".]

# <Data Writing for TELE>

13. \* [CMD], (1), (2)

\* [ADR], (A), (6)

\* [SET]

----- See Next Page -----

<Preparation for WIDE>

14. Make note the voltage at B302-8..... Voltage(B)

Example 3.578 V.

15. Subtract that was noted at step "2" Voltage(A)  
from voltage at step "17" Voltage(B).

Example:  $3.578 - 2.368 = 1.210V$

<Adjustment for WIDE side>

16. \* (CMD) , (1) , (8)

\* (ADR) , (B) , (1)

\* Push [INC] or [DEC] keys.

Spec. :

Voltage at B302-17 = 1.210V. (Voltage at  
Step. "15".)

<Data Writing for WIDE>

17. \* (CMD) , (0) , (2)

\* (ADR) , (A) , (5)

\* (SET) .

<Confirm the focus >

18. Turn the Power SW off/on .

19. Aim the Hunting Chart from a distance of 1m.

20. Push the [SHIFT 1 + 7] keys.....[Zoom to TELE. ]

21. Push the [SHIFT 1 + C] keys.....[Manual Focus. ]

22. Push the [SHIFT 2 + 9]keys.....[Focus (-) side]

(Wait few seconds until the picture focus does not  
change.)

23. Push the [SHIFT 2 + 5] keys....[Focus limit]

24. Check the back focus while zooming.

\* Push the [SHIFT 1 + 5] keys.....[Zoom to WIDE. ]

NOTE:

\* If back focus is good, Focus Encoder adjustment  
is not required.

\* If back focus is not good, Focus Encoder adjust-  
ment is required. (Go to Step "25".)

<Adjustment of Focus Encoder data>

Note:

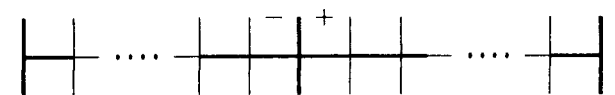
Transition of Focus encoder data is different from  
other data as shown below.

Example: Data "FF" + "2" steps = Data "01"

Data "01" - "3" steps = Data "FE"

(Hex. Value)

80 81 ..... FE FF 00 01 02 ..... 7E 7F



-128 -127 -2 -1 0 1 2 126 127

(Dec. Value)

-70 +74

Caution: Do not enter less than Data "BA" (-70).

Do not enter more than Data "4A" (+74).

(The Focus lens unit will be damaged.)

25. Confirm the focus condition on the TV Monitor.

\* focus improve when you pushed [SHIFT 2+ 9]keys  
Data for Focus Encoder decrease from original  
data.

\* Push [SHIFT 2+9]keys.....[Focus (-) side]

\* Push the [SHIFT 2 + 5] keys....[Focus limit]

Example:

If original data is "E7" Focus Encoder  
decrease from "E7" a little bit.

Push the following keys in order.

\* (CMD) , (1) , (2)

\* (ADR) , (B) , (0)

\* (DATA) , (E) , (6)

\* (SET) .

And then turn off/on the power sw,  
return to step "7".

\* focus improve when you pushed [SHIFT 2+ 8]keys  
Data for Focus Encoder increase from original  
data.

\* Push [SHIFT 2+8]keys.....[Focus (+) side]

\* Push the [SHIFT 2 + 5] keys....[Focus limit]

Example:

If original data is "E7" Focus Encoder  
increase from "E7" a little bit.

Push the following keys in order.

\* (CMD) , (1) , (2)

\* (ADR) , (B) , (0)

\* (DATA) , (E) , (8)

\* (SET) .

And then turn off/on the power sw,  
return to step "7".

## 5-4. ZOOM SPEED ADJUSTMENT

### <Preparation>

1. Push [SHIFT 1 + C] keys..... [Focus to MANUAL]
1. Push [SHIFT 1 + 5] keys.....[Zoom to WIDE]

### <Automatic calculation for zoom speed>

2. Push [SHIFT 2 + 7] keys.  
.....[Zoom Speed Calculation]
3. Turn OFF the POWER SW.
4. Turn ON the POWER SW.

## 5-5. V-SUB ADJUSTMENT

| CMD         | ADDRESS |                     | CHART           | M. EQ      |
|-------------|---------|---------------------|-----------------|------------|
|             | RAM     | E <sup>2</sup> PROM |                 |            |
| 18          | B0      | _____               | HALOGEN<br>LAMP | MONITOR TV |
| 12          | _____   | A5(H)               |                 |            |
| SPEC        |         |                     | TP              |            |
| NO BLOOMING |         |                     | MONITOR TV      |            |

### <Preparation>

1. Zoom all the way in(full TELE position) and aim the camera at the halogen lamp as shown Fig.C6.
2. Set the High Speed Shutter SW to Off position.
3. Diffuse the incoming light frosted glass or acryl plate.  
Place the cardboard which has been cut to "U" shape as shown Fig.C6 between camera.

### <Adjustment>

4. \* (CMD), (1), (8).  
\* (ADR), (B), (0).
5. Push (INC) or (DEC) keys.  
Spec.: (See fig.C6)  
The blooming just disappears.  
(If blooming does not disappear completely,adjust for least blooming.)

### <Data-Writing>

6. \* (CMD), (1), (2).  
\* (ADR), (A), (5).  
\* (SET).

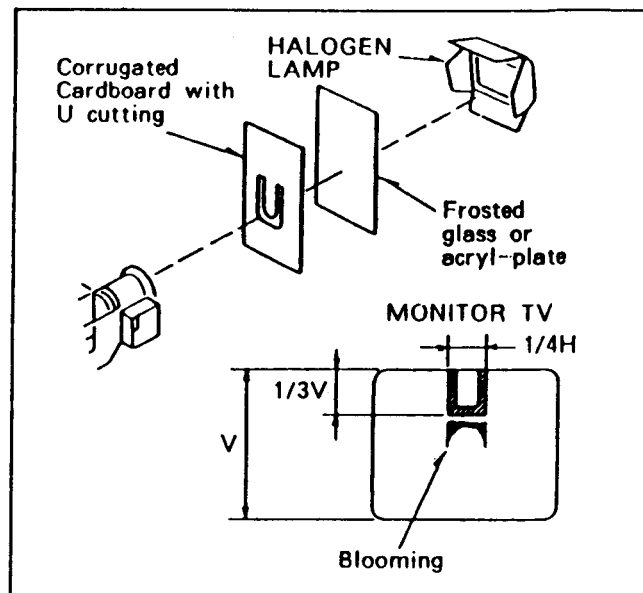


Fig.C6

## 5-6. Y-CLIP LEVEL ADJUSTMENT

| CMD             | ADDRESS |                     | CHART               | M. EQ        |
|-----------------|---------|---------------------|---------------------|--------------|
|                 | RAM     | E <sup>2</sup> PROM |                     |              |
| 18              | B9      | _____               | _____               | OSCILLOSCOPE |
| 02              | _____   | A9(L)               |                     |              |
| SPEC            |         |                     | TP                  |              |
| V/S = 2.57 ±0.1 |         |                     | B302-4 (VFK0734W-4) |              |

### <Preparation>

1. Push (SHIFT 2 + 4) keys.....[White Fade ON.]
2. Connect the oscilloscope to B302-4.

### <Adjustment>

3. \* (CMD), (1), (8).  
\* (ADR), (B), (9).
4. Push (INC) or (DEC) keys.  
Spec.: (See Fig. C7)  
V and S ratio = 2.57 : 1  
(V) : (S)

### <Data-Writing>

5. \* (CMD), (0), (2).  
\* (ADR), (A), (9).  
\* (SET).
6. Push (SHIFT 2 + 1) keys.....[Fade OFF]

----- See Next page. -----

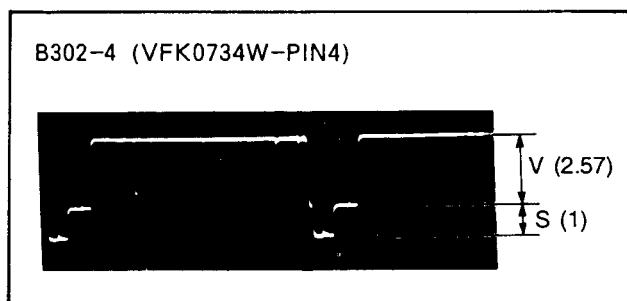


Fig.C7

# 5-7. PEDESTAL LEVEL ADJUSTMENT

| CMD                 | ADDRESS |                     | CHART              | M. EQ        |
|---------------------|---------|---------------------|--------------------|--------------|
|                     | RAM     | E <sup>2</sup> PROM |                    |              |
| 18                  | B6      | _____               | _____              | OSCILLOSCOPE |
| 12                  | _____   | A8(H)               |                    |              |
| SPEC                |         |                     | TP                 |              |
| <u>A = 20 ± 5mV</u> |         |                     | B302-4 (VFK0734-4) |              |

## <Preparation>

1. Push [SHIFT 1+ 1] keys.....[Iris close.]
2. Push [SHIFT 1+ A] keys.....[AGC Gain Max.]
3. Connect the oscilloscope to B302-4.

## <Adjustment>

4. \* [CMD], (1), (8).  
\* [ADR], (B), (6).
5. Push [INC] or [DEC] keys.  
Spec.: (See Fig.C8)  
The "A" level is minimized(less than  $20 \pm 5mV$ .).

## <Data-Writing>

6. \* [CMD], (1), (2).  
\* [ADR], (A), (8).  
\* [SET].
7. Push [SHIFT 1+ B] keys.....[AGC Auto.]
8. Push [SHIFT 1+ 3] keys.....[Iris Auto.]

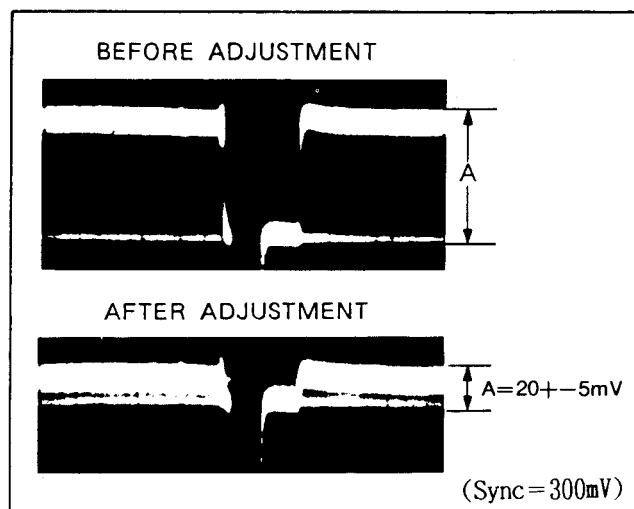


Fig.C8

# 5-8. AGC ADJUSTMENT

| CMD                    | ADDRESS |                     | CHART                  | M. EQ        |
|------------------------|---------|---------------------|------------------------|--------------|
|                        | RAM     | E <sup>2</sup> PROM |                        |              |
| 18                     | CE      | _____               | GRAY<br>SCALE<br>CHART | OSCILLOSCOPE |
| 02                     | _____   | A8(L)               |                        |              |
| SPEC                   |         |                     | TP                     |              |
| <u>A = 320 ± 20 mV</u> |         |                     | B302-20 (VFK0734-20)   |              |

## <Preparation 1>

1. Aim the camera at Gray Scale Chart.  
Push [SHIFT 1 + 2] keys..... [Iris Manual.]
2. Connect the oscilloscope to B302-5.

## <Preset the input signal level>

3. Preset the input signal level, using <Preset 1 (Rough)> and <Preset 2(Fine)>.

## <Preset 1(Rough)>

- \* [CMD], (1), (8).
- \* [ADR], (D), (F).
- Push [INC] or [DEC] keys.
- Spec.: (See Fig.C13)
- Signal level at B302-5 = 320 ± 20mV

----- See Next Page -----

<Preset-2(Fine)>

\* (CMD), (1), (8).

\* (ADR), (D), (E).

Push (INC) or (DEC) keys.

Spec.: (See Fig. C9.)

Signal level B302-5 =  $320 \pm 10\text{mV}$

<Preparation 2>

4. Connect the oscilloscope to B302-20.

<AGC Adjustment>

5. \* (CMD), (1), (8).

\* (ADR), (C), (E).

6. Push (INC) or (DEC) keys.

Spec.: (See Fig. C9)

Signal level : B302-20 =  $320 \pm 20\text{mV}$

<Data-Writing>

7. \* (CMD), (0), (2).

\* (ADR), (A), (8).

\* (SET).

8. Push [SHIFT 1 + 3] keys..... [Iris auto.]

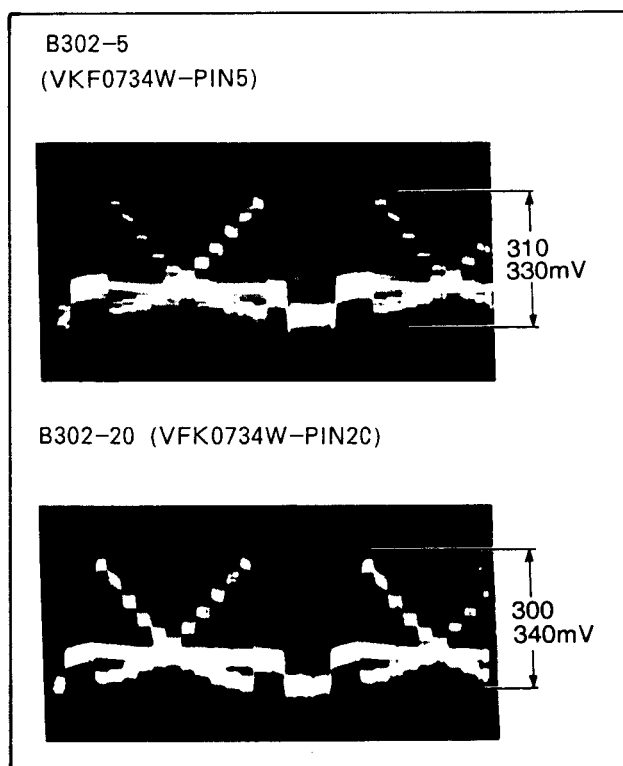


Fig. C9

## 5-9. A/D INPUT LEVEL ADJUSTMENT

| CMD                | ADDRESS |                     | CHART                  | M. EQ        |
|--------------------|---------|---------------------|------------------------|--------------|
|                    | RAM     | E <sup>2</sup> PROM |                        |              |
| 18                 | 5B      | _____               | GRAY<br>SCALE<br>CHART | OSCILLOSCOPE |
| 12                 | _____   | A9(H)               |                        |              |
| SPEC               |         |                     | TP                     |              |
| <u>1.16V ±40mV</u> |         |                     | B302-6 (VFK0734W-6)    |              |

<Preparation 1>

1. Aim the camera at Gray Scale Chart.

Push [SHIFT 1 + 2] keys..... [Iris Manual.]

2. Connect the oscilloscope to B302-5..

<Preset the input signal level>

3. Preset the input signal level, using <Preset 1 (Rough)> and <Preset 2(Fine)>.

<Preset 1(Rough)>

\* (CMD), (1), (8).

\* (ADR), (D), (F).

Push (INC) or (DEC) keys.

Spec.: (See Fig. C10)

Signal level at B302-5 =  $320 \pm 20\text{mV}$

<Preset-2(Fine)>

\* (CMD), (1), (8).

\* (ADR), (D), (E).

Push (INC) or (DEC) keys.

Spec.: (See Fig. C10.)

Signal level B302-5 =  $320 \pm 10\text{mV}$

<Preparation 2>

4. Connect the oscilloscope to B302-6.

<A/D Input Level Adjustment>

5. \* (CMD), (1), (8).

\* (ADR), (5), (B).

6. Push (INC) or (DEC) keys.

Spec.: (See Fig. C10.)

Signal level : B302-6 =  $1.16\text{V} \pm 40\text{mV}$

----- See Next Page -----

<Data-Writing>

7. \* (CMD), (1), (2).

\* (ADR), (A), (9).

\* (SET).

8. Push [SHIFT 1 + 3] keys..... [Iris auto.]

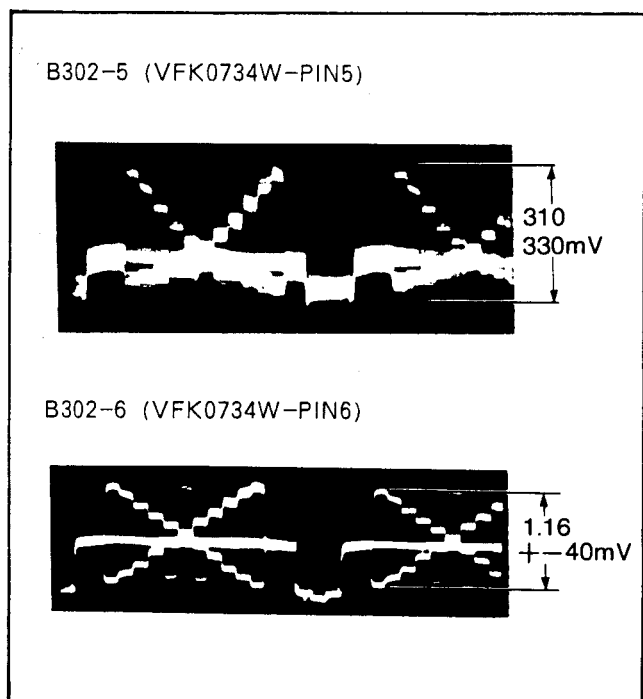


Fig. C10

2. Connect the oscilloscope to B302-6.

<Adjustment>

3. \* (CMD), (1), (8).

\* (ADR), (D), (4).

4. Push [INC] or [DEC] keys.

Spec.: (See Fig. C11)

The voltage at B302-6 :  $1.16V \pm 40mV$ .

<Data-Writing>

5. \* (CMD), (1), (2).

\* (ADR), (A), (4).

\* (SET).

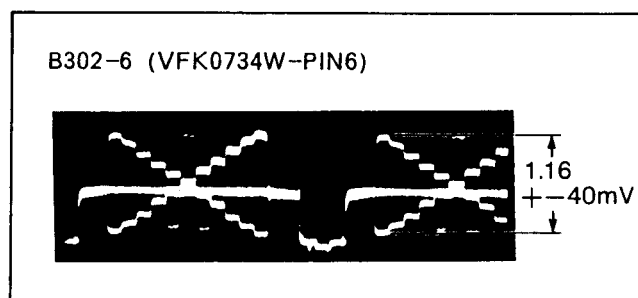


Fig. C11

5-10. ALC ADJUSTMENT

| CMD                 | ADDRESS |                     | CHART                  | M. EQ        |
|---------------------|---------|---------------------|------------------------|--------------|
|                     | RAM     | E <sup>2</sup> PROM |                        |              |
| 18                  | D4      | _____               | GRAY<br>SCALE<br>CHART | OSCILLOSCOPE |
| 12                  | _____   | A4(U)               |                        |              |
| SPEC                |         |                     | TP                     |              |
| <u>1.16V ± 40mV</u> |         |                     | B302-6 (VFK0734W-6)    |              |

Note:

Perform this adjustment after finishing the AGC, A/D input Level Adjustment.

<Preparation>

1. Aim the camera at Gray Scale Chart.

Push [SHIFT 1+ 3] keys.....[Iris auto.]

5-11. VTR CARRIER BALANCE ADJUSTMENT

| CMD                   | ADDRESS          |                        | CHART     | M. EQ       |
|-----------------------|------------------|------------------------|-----------|-------------|
|                       | RAM              | E <sup>2</sup> PROM    |           |             |
| 18                    | BB [B]<br>BA [R] | _____                  | _____     | VECTORSCOPE |
| 02<br>12              | _____            | AA(L) [B]<br>AA(H) [R] |           |             |
| SPEC                  |                  |                        |           |             |
| CENTRE OF VECTORSCOPE |                  |                        | VIDEO OUT |             |

<Preparation>

1. Connect the vectorscope to Video out.

2. Aim the camera at white chart.

3. Push [SHIFT 1 + 4] keys .....[White set.]

4. Push [SHIFT 1 + 1] keys .....[Iris close.]

5. Push [SHIFT 1 + 9] keys .....[AGC Minimum.]

----- See Next Page -----

<Adjustment for B-Y>

6. \* [CMD], (1), (8).

\* [ADR], (B), (B).

7. Push (INC) or (DEC) keys.

Spec.: (See Fig.C12)

The Vectore are in or close as possible to the centre.

<Data-Writing>

8. \* [CMD], (0), (2).

\* [ADR], (A), (A).

\* [SET].

<Adjustment for R-Y>

9. \* [CMD], (1), (8).

\* [ADR], (B), (A).

10. Push (INC) or (DEC) keys.

Spec.: (See Fig.C12)

The Vectore are in or close as possible to the centre.

<Data-Writing>

11. \* [CMD], (1), (2).

\* [ADR], (A), (A).

\* [SET].

12. \*Push [SHIFT 1 + 3] keys .....[Iris Auto.]

\*Push [SHIFT 1 + B] keys .....[AGC Auto.]

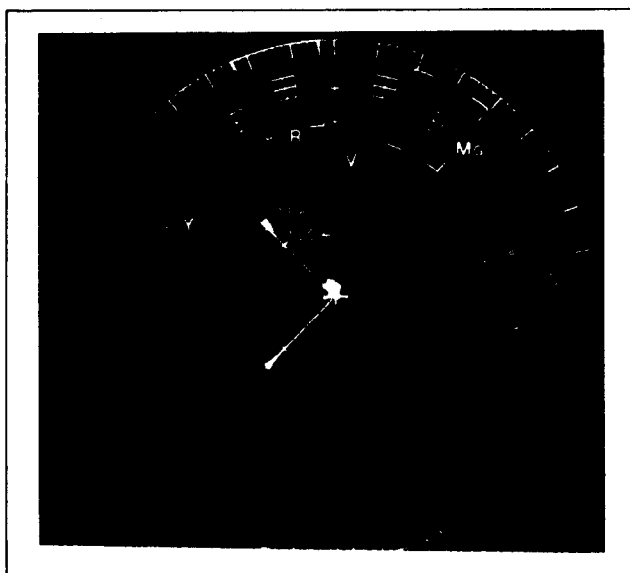


Fig.C12

## 5-12. INDOOR WHITE BALANCE ADJUSTMENT

| CMD                   | ADDRESS          |                     | CHART          | M. EQ       |
|-----------------------|------------------|---------------------|----------------|-------------|
|                       | RAM              | E <sup>2</sup> PROM |                |             |
| 19                    | 8B [R]<br>7B [B] | _____               | WHITE<br>CHART | VECTORSCOPE |
| 02                    | _____            | 25(L)[R]            |                |             |
| 12                    |                  | 25(H)[B]            |                |             |
| SPEC                  |                  |                     | TP             |             |
| CENTRE OF VECTORSCOPE |                  |                     | VIDEO OUT      |             |

<Preparation>

1.Connect the Video out to Vectorscope.

2.Aim the camera at the white chart.

Push [SHIFT 1 + 4] keys.....[White set.]

(Confirm, the vector comes to centre).

(See Fig.C13)

<Read out the R-Y data>

3. \* [CMD], (1), (9).

\* [ADR], (8), (B).

\* [SET].

(When the pushed [SET] key, Data LED of EVR indicate the data of white balance for R-Y)

<Data-Writing>

4. \* [CMD], (0), (2).

\* [ADR], (2), (5).

\* [SET].

<Read out the B-Y data>

5. \* [CMD], (1), (9).

\* [ADR], (7), (B).

\* [SET].

(When the pushed [SET] key, Data LED of EVR indicate the data of white balance for B-Y)

<Data-Writing>

6. \* [CMD], (1), (2).

\* [ADR], (2), (5).

\* [SET].

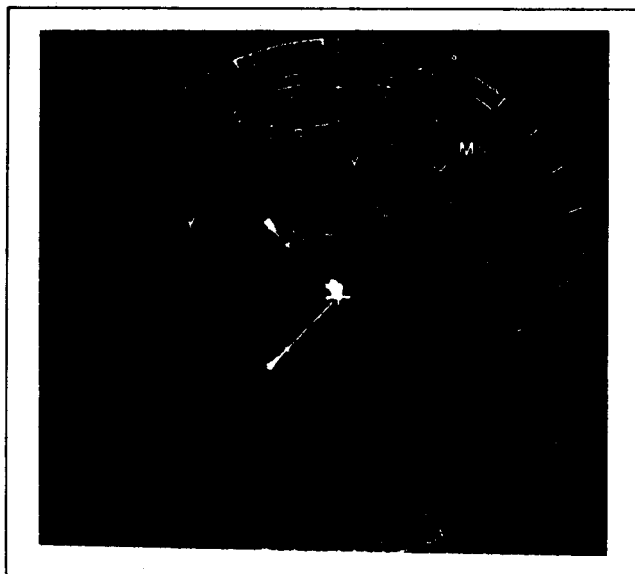


Fig.C13

### 5-13. COLOUR PHASE AND GAIN ADJUSTMENT (INDOOR)

| CMD                                                            | ADDRESS                                      |                            | CHART               | M. EQ       |
|----------------------------------------------------------------|----------------------------------------------|----------------------------|---------------------|-------------|
|                                                                | RAM                                          | E <sup>2</sup> PROM        |                     |             |
| 18                                                             | 55 [R-G]<br>57 [R-P]<br>54 [B-G]<br>56 [B-P] | _____                      | COLOUR<br>BAR CHART | VECTORSCOPE |
| 02                                                             | _____                                        | 05(L) [R-G]<br>15(L) [R-P] |                     |             |
| 12                                                             |                                              | 05(H) [B-G]<br>15(H) [B-P] |                     |             |
| SPEC                                                           |                                              |                            | TP                  |             |
| RED-phase :104 ±3 degree<br>gain :180 ±10%<br>(RED/BURST)      |                                              |                            | VIDEO OUT           |             |
| YELLOW phase:168 ±3 degree<br>gain :130 ±10%<br>(YELLOW/BURST) |                                              |                            |                     |             |

**Note:**

Be sure to carry out the indoor White Balance Adjustment before doing this Adjustment.

**<Preparation>**

1. Connect the Video out to Vectorscope.
2. Aim the camera at the Colour bar chart.

**NOTE:**

Repeat the following steps (step(3) to (14)), as necessary to complete adjustment.

**<R-Y Gain Adjustment>**

3. \* (CMD), (1), (8).  
\* (ADR), (5), (5).
4. Push (INC) or (DEC) keys.  
Spec.: See Fig.C14.

**<R-Y Gain Data-Writing>**

5. \* (CMD), (0), (2).  
\* (ADR), (0), (5).  
\* (SET).

**<R-Y Phase Adjustment>**

6. \* (CMD), (1), (8).  
\* (ADR), (5), (7).
7. Push (INC) or (DEC) keys.  
Spec.: See Fig.C14.

**<R-Y Phase Data-Writing>**

8. \* (CMD), (0), (2).  
\* (ADR), (1), (5).  
\* (SET).

**<B-Y Gain Adjustment>**

9. \* (CMD), (1), (8).  
\* (ADR), (5), (4).
10. Push (INC) or (DEC) keys.  
Spec.: See Fig.C14.

**<B-Y Gain Data-Writing>**

11. \* (CMD), (1), (2).  
\* (ADR), (0), (5).  
\* (SET).

**<B-Y Phase Adjustment>**

12. \* (CMD), (1), (8).  
\* (ADR), (5), (6).
13. Push (INC) or (DEC) keys.  
Spec.: See Fig.C14.

**<B-Y Phase Data-Writing>**

14. \* (CMD), (1), (2).  
\* (ADR), (1), (5).  
\* (SET).



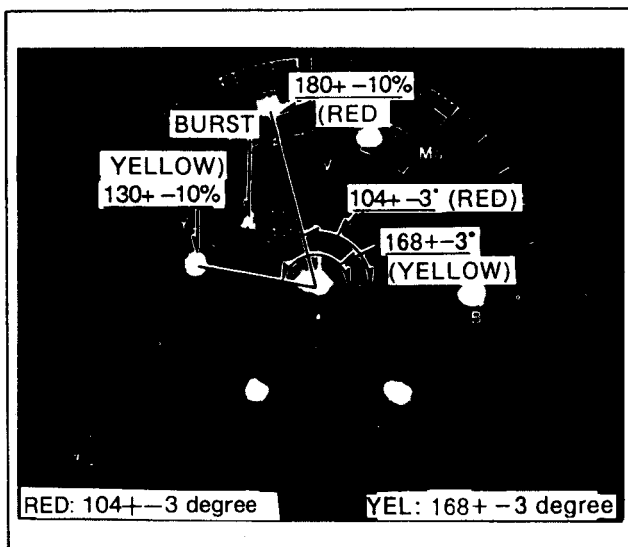


Fig. C14

#### 5-14. OUTDOOR WHITE BALANCE ADJUSTMENT

| CMD                                                           | ADDRESS          |                     | CHART          | M. EQ       |
|---------------------------------------------------------------|------------------|---------------------|----------------|-------------|
|                                                               | RAM              | E <sup>2</sup> PROM |                |             |
| 19                                                            | 8B [R]<br>7B [B] | _____               | WHITE<br>CHART | VECTORSCOPE |
| 02                                                            | _____            | 21(L) [R]           |                |             |
| 12                                                            | _____            | 21(H) [B]           |                |             |
| SPEC                                                          |                  |                     | TP             |             |
| CENTRE OF VECTORSCOPE                                         |                  |                     | VIDEO OUT      |             |
| CONDITION                                                     |                  |                     |                |             |
| TEMPERATURE CONVERSION<br>FILTER: VFK0713(C12)<br>VFK0716(C2) |                  |                     |                |             |

##### <Preparation>

1. Connect the Video out to Vectorscope.
2. Cover the Lens with Colour temperature conversion filter VFK0713(C12) and VFK0716(C2) to imitate the outdoor lighting.
3. Aim the camera at the white chart.  
Push [SHIFT 1 +4] keys..... [White set.]  
(Please confirm, vector comes to centre.)  
(See Fig. C15 )

##### <Read out the R-Y data>

4. \* [CMD], (1), (9).  
\* [ADR], (8), (B).  
\* [SET].

(When the pushed [SET] key, Data LED of EVR indicate the data of white balance for R-Y)

##### <R-Y Data-Writing>

5. \* [CMD], (0), (2).  
\* [ADR], (2), (1).  
\* [SET].

##### <Read out the B-Y data>

6. \* [CMD], (1), (9).  
\* [ADR], (7), (B).  
\* [SET].

(When the pushed [SET] key, Data LED of EVR indicate the data of white balance for B-Y)

##### <B-Y Data-Writing>

7. \* [CMD], (1), (2).  
\* [ADR], (2), (1).  
\* [SET].

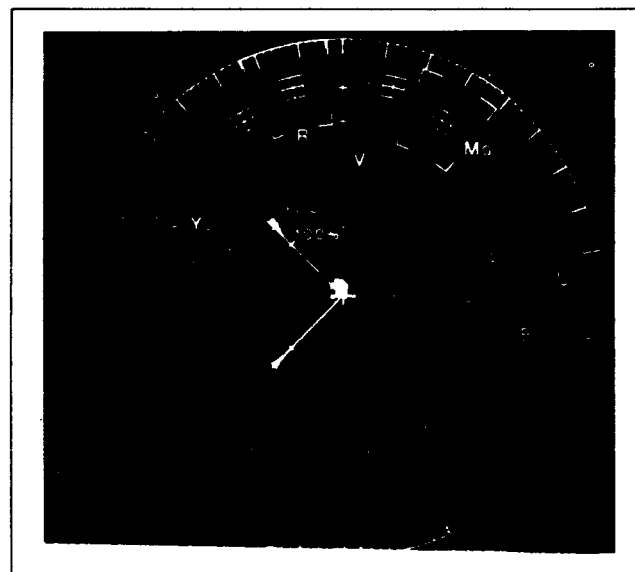


Fig. C15

# 5-15. COLOUR PHASE AND GAIN ADJUSTMENT (OUTDOOR)

| CMD                                                            | ADDRESS  |                            | CHART                                                         | M. EQ       |
|----------------------------------------------------------------|----------|----------------------------|---------------------------------------------------------------|-------------|
|                                                                | RAM      | E <sup>2</sup> PROM        |                                                               |             |
| 18                                                             | 55 [R-G] | _____                      | COLOUR<br>BAR CHART                                           | VECTORSCOPE |
|                                                                | 57 [R-P] |                            |                                                               |             |
|                                                                | 54 [B-G] |                            |                                                               |             |
|                                                                | 56 [B-P] |                            |                                                               |             |
| 02                                                             | _____    | 01(L) [R-G]<br>11(L) [R-P] |                                                               |             |
| 12                                                             |          | 01(H) [B-G]<br>11(H) [B-P] |                                                               |             |
| SPEC                                                           |          |                            | TP                                                            |             |
| RED-phase :104 ±3 degree<br>gain :180 ±10%<br>(RED/BURST)      |          |                            | VIDEO OUT                                                     |             |
| YELLOW phase:168 ±3 degree<br>gain :130 ±10%<br>(YELLOW/BURST) |          |                            | CONDITION                                                     |             |
|                                                                |          |                            | TEMPERATURE CONVERSION<br>FILTER: VFK0713(C12)<br>VFK0716(C2) |             |

Note:

Be sure to carry out the Outdoor White Balance Adjustment before doing this Adjustment.

## <Preparation>

1. Connect the Video out to Vectorscope.
2. Cover the Lens with Colour temperature conversion filter VFK0713(C12) and VFK0716(C2) to imitate the outdoor lighting.
3. Aim the camera at the Colour bar chart.

NOTE:

Repeat the following steps (step(3) to (15)), as necessary to complete adjustment.

## <R-Y Gain Adjustment>

4. \* (CMD), (1), (8).
  - \* (ADR), (5), (5).
  5. Push (INC) or (DEC) keys.
- Spec.: See Fig.C16.

## <R-Y Gain Data-Writing>

6. \* (CMD), (0), (2).
- \* (ADR), (0), (1).
- \* (SET).

## <R-Y Phase Adjustment>

7. \* (CMD), (1), (8).
  - \* (ADR), (5), (7).
  8. Push (INC) or (DEC) keys.
- Spec.: See Fig.C16.

## <R-Y Phase Data-Writing>

9. \* (CMD), (0), (2).
- \* (ADR), (1), (1).
- \* (SET).

## <B-Y Gain Adjustment>

10. \* (CMD), (1), (8).
  - \* (ADR), (5), (4).
  11. Push (INC) or (DEC) keys.
- Spec.: See Fig.C16.

## <B-Y Gain Data-Writing>

12. \* (CMD), (1), (2).
- \* (ADR), (0), (1).
- \* (SET).

## <B-Y Phase Adjustment>

13. \* (CMD), (1), (8).
  - \* (ADR), (5), (6).
  14. Push (INC) or (DEC) keys.
- Spec.: See Fig.C16.

## <B-Y Phase Data-Writing>

15. \* (CMD), (1), (2).
- \* (ADR), (1), (1).
- \* (SET).

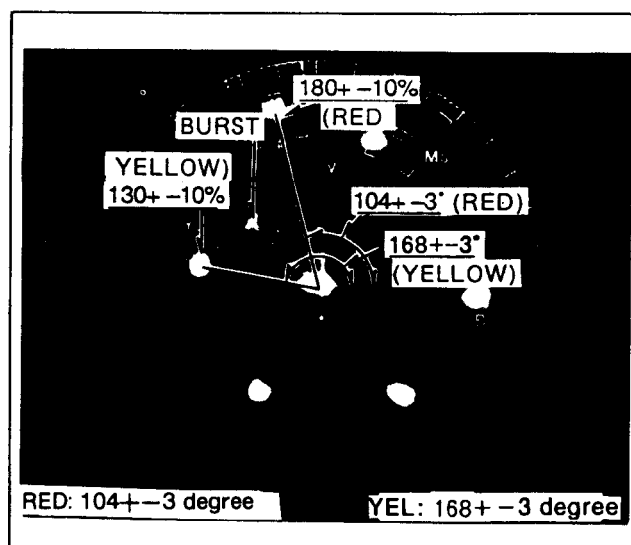


Fig.C16

## 5-16. DATA WRITING FOR COLOUR REPRODUCTION AND WHITE BALANCE

<Start calculation>

1. Push [SHIFT 2 + A] at same time.

\*The above commands write, results of all formulas in Fig.C18-1 and C18-2 to EEPROM automatically.

NOTE:

Each adjustment voltage is recorded in EEPROM as digital data. For colour reproduction adjustment such as white balance, phase and gain adjustments, the adjustment have only been performed for indoor lighting (3100 degree kelvin) and outdoor light (5100 degree kelvin).

The EEPROM requires the data for other lighting conditions such as 3600, 4500, and 6000 degree kelvin

\* If you want to calculate each data, read table as shown below.

How to calculate and enter the data manually.  
You can do calculation and entering the data to EEPROM manually as follows.

(For Example)

ITEM : B-Y Matrix 3600

FORMULA :  $ADR"15" + 0.768 \times (ADR"11" - ADR"15")$

EEPROM Address : "13" (High digit side)

1) How to Read out the data from EEPROM are as

follows

Push the following keys in order.

\*(CMD), (1), (4).

\*(ADR), (1), (3).

\*(SET),

(The number which is indicated in "DATA" LED is a data of ADR"13")

For example, if indicated data is "7B",

substitute "7B" (This is hexadecimal number)

The same as above, read out the data from address "11" and "15".

For example, if data which is read out, ADR"11" = "7C", ADR"15" = "7A", above formula becomes

$$B-Y \text{ Matrix } 3600 = 7A + 0.768 \times (7C - 7A)$$

----- See Next Page -----

2) Convert the hexadecimal data into decimal number using conversion table (See Fig.C17)

For example "7A" in hexadecimal is "122" in decimal from intersection of 7 and A.

Substitute it into the formula.

$$\begin{aligned} B-Y \text{ Matrix } 3600 &= 122 + 0.768 \times (124 - 122) \\ &= 122 + 0.768 \times (2) \\ &= 123.536 \\ &= 124 \end{aligned}$$

3) Convert the result "124" to hexadecimal using conversion table (See Fig.C17.)

"124" decimal is "7C" in hexadecimal.

Write the "7C" into EEPROM address "13".

Push the following keys in order.

\*(CMD), (1), (2).

\*(ADR), (1), (3).

\*(DATA), (7), (C).

\*(SET).

(Hexadecimal-Decimal Conversion Table)

For some of adjustment items, calculation of hexadecimal data (indicated on LED of EVR fixture) is needed to obtain the adjustment data.

In these cases, convert the hexadecimal value to decimal value before calculation and after calculation is finished reconvert the result to hexadecimal to obtain the adjustment data write the new hexadecimal adjustment data into EEPROM.

A hexadecimal-decimal conversion table is shown in Fig. C17.

| Hexadecimal<br>lower digit<br>Hexadecimal<br>upper digit | ②   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                                          | 0   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | A   | B   | C   | D   | E   | F   |
| 0                                                        | 0   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  |
| 1                                                        | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  | 25  | 26  | 27  | 28  | 29  | 30  | 31  |
| 2                                                        | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  |
| 3                                                        | 48  | 49  | 50  | 51  | 52  | 53  | 54  | 55  | 56  | 57  | 58  | 59  | 60  | 61  | 62  | 63  |
| 4                                                        | 64  | 65  | 66  | 67  | 68  | 69  | 70  | 71  | 72  | 73  | 74  | 75  | 76  | 77  | 78  | 79  |
| 5                                                        | 80  | 81  | 82  | 83  | 84  | 85  | 86  | 87  | 88  | 89  | 90  | 91  | 92  | 93  | 94  | 95  |
| ① 6                                                      | 96  | 97  | 98  | 99  | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| 7                                                        | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| 8                                                        | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 |
| 9                                                        | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 |
| A                                                        | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 |
| B                                                        | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 |
| C                                                        | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| D                                                        | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 |
| E                                                        | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| F                                                        | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 |

For example: If indication of EVR is "6D" (as upper digit is "6" and lower digit is "D"), a decimal value of "109" is obtained from the intersection of ① and ② in the above table.

Fig. C17

Calculation for Colour Reproduction

| NBR | ITEM                            | EEPROM ADDRESS | CMD                 | FORMULA                                      | RESULT OF CALCULATION |
|-----|---------------------------------|----------------|---------------------|----------------------------------------------|-----------------------|
| 1   | R-Y Gain Control<br>2800        | 0 6            | READ 04<br>WRITE 02 | ADR"05"                                      |                       |
| 2   | R-Y Gain Control<br>MIX         | 0 4            | READ 04<br>WRITE 02 | $ADR"05" + 1.000 \times (ADR"01" - ADR"05")$ |                       |
| 3   | R-Y Gain Control<br>3600        | 0 3            | READ 04<br>WRITE 02 | $ADR"05" + 1.000 \times (ADR"01" - ADR"05")$ |                       |
| 4   | R-Y Gain Control<br>4500        | 0 2            | READ 04<br>WRITE 02 | $ADR"05" + 0.701 \times (ADR"01" - ADR"05")$ |                       |
| 5   | R-Y Gain Control<br>6000        | 0 0            | READ 04<br>WRITE 02 | $ADR"05" + 1.000 \times (ADR"01" - ADR"05")$ |                       |
| 6   | R-Y Matrix<br>2800              | 1 6            | READ 04<br>WRITE 02 | ADR"15"                                      |                       |
| 7   | R-Y Matrix<br>MIX               | 1 4            | READ 04<br>WRITE 02 | $ADR"15" + 1.000 \times (ADR"11" - ADR"15")$ |                       |
| 8   | R-Y Matrix<br>3600              | 1 3            | READ 04<br>WRITE 02 | ADR"15"                                      |                       |
| 9   | R-Y Matrix<br>4500              | 1 2            | READ 04<br>WRITE 02 | ADR"15"                                      |                       |
| 1 0 | R-Y Matrix<br>6000              | 1 0            | READ 04<br>WRITE 02 | $ADR"15" + 1.000 \times (ADR"11" - ADR"15")$ |                       |
| 1 1 | R-Y White Balance<br>2800       | 2 6            | READ 04<br>WRITE 02 | $ADR"25" - 0.606 \times (ADR"21" - ADR"25")$ |                       |
| 1 2 | R-Y White Balance<br>3600       | 2 3            | READ 04<br>WRITE 02 | $ADR"25" + 0.569 \times (ADR"21" - ADR"25")$ |                       |
| 1 3 | R-Y White Balance<br>4500       | 2 2            | READ 04<br>WRITE 02 | $ADR"25" + 1.038 \times (ADR"21" - ADR"25")$ |                       |
| 1 4 | R-Y White Balance<br>4900       | 2 4            | READ 04<br>WRITE 02 | $ADR"25" + 1.000 \times (ADR"21" - ADR"25")$ |                       |
| 1 5 | R-Y White Balance<br>6000       | 2 0            | READ 04<br>WRITE 02 | $ADR"25" + 1.233 \times (ADR"21" - ADR"25")$ |                       |
| 1 6 | R-Y White Balance<br>Low Limit  | 2 7            | READ 04<br>WRITE 02 | $ADR"25" + 1.233 \times (ADR"21" - ADR"25")$ |                       |
| 1 7 | R-Y White Balance<br>High Limit | 2 8            | READ 04<br>WRITE 02 | $ADR"25" + 1.000 \times (ADR"21" - ADR"25")$ |                       |
| 1 8 | R-Y Axis Threshold              | 4 8            | READ 04<br>WRITE 02 | $ADR"25" + 0.759 \times (ADR"21" - ADR"25")$ |                       |
| 1 9 | B-Y Gain Control<br>2800        | 0 6            | READ 14<br>WRITE 12 | ADR"05"                                      |                       |
| 2 0 | B-Y Gain Control<br>MIX         | 0 4            | READ 14<br>WRITE 12 | $ADR"05" + 1.000 \times (ADR"01" - ADR"05")$ |                       |
| 2 1 | B-Y Gain Control<br>3600        | 0 3            | READ 14<br>WRITE 12 | $ADR"05" + 0.449 \times (ADR"01" - ADR"05")$ |                       |
| 2 2 | B-Y Gain Control<br>4500        | 0 2            | READ 14<br>WRITE 12 | $ADR"05" + 0.818 \times (ADR"01" - ADR"05")$ |                       |
| 2 3 | B-Y Gain Control<br>6000        | 0 0            | READ 14<br>WRITE 12 | $ADR"05" + 1.000 \times (ADR"01" - ADR"05")$ |                       |
| 2 4 | B-Y Matrix<br>2800              | 1 6            | READ 14<br>WRITE 12 | ADR"15"                                      |                       |
| 2 5 | B-Y Matrix<br>MIX               | 1 4            | READ 14<br>WRITE 12 | $ADR"15" + 1.000 \times (ADR"11" - ADR"15")$ |                       |
| 2 6 | B-Y Matrix<br>3600              | 1 3            | READ 14<br>WRITE 12 | $ADR"15" + 0.768 \times (ADR"11" - ADR"15")$ |                       |
| 2 7 | B-Y Matrix<br>4500              | 1 2            | READ 14<br>WRITE 12 | $ADR"15" + 0.548 \times (ADR"11" - ADR"15")$ |                       |
| 2 8 | B-Y Matrix<br>6000              | 1 0            | READ 14<br>WRITE 12 | $ADR"15" + 1.000 \times (ADR"11" - ADR"15")$ |                       |
| 2 9 | B-Y White Balance<br>2800       | 2 6            | READ 14<br>WRITE 12 | $ADR"25" - 0.233 \times (ADR"21" - ADR"25")$ |                       |
| 3 0 | B-Y White Balance<br>3600       | 2 3            | READ 14<br>WRITE 12 | $ADR"25" + 0.287 \times (ADR"21" - ADR"25")$ |                       |
| 3 1 | B-Y White Balance<br>4500       | 2 2            | READ 14<br>WRITE 12 | $ADR"25" + 0.565 \times (ADR"21" - ADR"25")$ |                       |
| 3 2 | B-Y White Balance<br>4900       | 2 4            | READ 14<br>WRITE 12 | $ADR"25" + 1.000 \times (ADR"21" - ADR"25")$ |                       |
| 3 3 | B-Y White Balance<br>6000       | 2 0            | READ 14<br>WRITE 12 | $ADR"25" + 1.699 \times (ADR"21" - ADR"25")$ |                       |
| 3 4 | B-Y White Balance<br>Low Limit  | 2 7            | READ 14<br>WRITE 12 | $ADR"25" + 1.699 \times (ADR"21" - ADR"25")$ |                       |
| 3 5 | B-Y White Balance<br>High Limit | 2 8            | READ 14<br>WRITE 12 | $ADR"25" + 1.000 \times (ADR"21" - ADR"25")$ |                       |
| 3 6 | B-Y Axis Threshold              | 4 8            | READ 14<br>WRITE 12 | FIXED DATA                                   |                       |

Fig. C18-1

Calculation for Auto White Balance

| NBR | ITEM                   | EEPROM ADDRESS | CMD                 | FORMULA                                                      | RESULT OF CALCULATION |
|-----|------------------------|----------------|---------------------|--------------------------------------------------------------|-----------------------|
| 1   | B-Y High limit<br>2800 | 4 6            | READ 14<br>WRITE 12 | $ADR^{25} - 0.847 \times (ADR^{21} - ADR^{25})$              |                       |
| 2   | B-Y High limit<br>3100 | 4 5            | READ 14<br>WRITE 12 | $ADR^{25} - 0.581 \times (ADR^{21} - ADR^{25})$              |                       |
| 3   | B-Y High limit<br>3600 | 4 3            | READ 14<br>WRITE 12 | $ADR^{25} - 0.288 \times (ADR^{21} - ADR^{25})$              |                       |
| 4   | B-Y High limit<br>4500 | 4 2            | READ 14<br>WRITE 12 | $ADR^{25} + 0.077 \times (ADR^{21} - ADR^{25})$              |                       |
| 5   | B-Y High limit<br>5100 | 4 1            | READ 14<br>WRITE 12 | $ADR^{25} + 0.765 \times (ADR^{21} - ADR^{25})$              |                       |
| 6   | B-Y High limit<br>6000 | 4 0            | READ 14<br>WRITE 12 | $ADR^{25} + 2.083 \times (ADR^{21} - ADR^{25})$              |                       |
| 7   | B-Y Low limit<br>2800  | 3 6            | READ 14<br>WRITE 12 | $ADR^{25} + 0.082 \times (ADR^{21} - ADR^{25})$              |                       |
| 8   | B-Y Low limit<br>3100  | 3 5            | READ 14<br>WRITE 12 | $ADR^{25} + 0.256 \times (ADR^{21} - ADR^{25})$              |                       |
| 9   | B-Y Low limit<br>3600  | 3 3            | READ 14<br>WRITE 12 | $ADR^{25} + 0.558 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 0 | B-Y Low limit<br>4500  | 3 2            | READ 14<br>WRITE 12 | $(ADR^{25} + 0.765 \times (ADR^{21} - ADR^{25}))$<br>+ 1 bit |                       |
| 1 1 | B-Y Low limit<br>5100  | 3 1            | READ 14<br>WRITE 12 | $ADR^{25} + 2.083 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 2 | B-Y Low limit<br>6000  | 3 0            | READ 14<br>WRITE 12 | $ADR^{25} + 2.102 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 3 | R-Y High limit<br>2800 | 4 6            | READ 04<br>WRITE 02 | $ADR^{25} - 1.401 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 4 | R-Y High limit<br>3100 | 4 5            | READ 04<br>WRITE 02 | $ADR^{25} - 0.528 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 5 | R-Y High limit<br>3600 | 4 3            | READ 04<br>WRITE 02 | $ADR^{25} + 0.239 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 6 | R-Y High limit<br>4500 | 4 2            | READ 04<br>WRITE 02 | $ADR^{25} + 0.759 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 7 | R-Y High limit<br>5100 | 4 1            | READ 04<br>WRITE 02 | $ADR^{25} + 0.759 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 8 | R-Y High limit<br>6000 | 4 0            | READ 04<br>WRITE 02 | $ADR^{25} + 0.759 \times (ADR^{21} - ADR^{25})$              |                       |
| 1 9 | R-Y Low limit<br>2800  | 3 6            | READ 04<br>WRITE 02 | $ADR^{25} - 0.528 \times (ADR^{21} - ADR^{25})$              |                       |
| 2 0 | R-Y Low limit<br>3100  | 3 5            | READ 04<br>WRITE 02 | $(ADR^{25} + 0.239 \times (ADR^{21} - ADR^{25}))$<br>+ 1 bit |                       |
| 2 1 | R-Y Low limit<br>3600  | 3 3            | READ 04<br>WRITE 02 | $(ADR^{25} + 0.759 \times (ADR^{21} - ADR^{25}))$<br>+ 1 bit |                       |
| 2 2 | R-Y Low limit<br>4500  | 3 2            | READ 04<br>WRITE 02 | $ADR^{25} + 1.142 \times (ADR^{21} - ADR^{25})$              |                       |
| 2 3 | R-Y Low limit<br>5100  | 3 1            | READ 04<br>WRITE 02 | $ADR^{25} + 1.533 \times (ADR^{21} - ADR^{25})$              |                       |
| 2 4 | R-Y Low limit<br>6000  | 3 0            | READ 04<br>WRITE 02 | $ADR^{25} + 1.533 \times (ADR^{21} - ADR^{25})$              |                       |

Fig.C18-2.

## 6. E. V. R. ADJUSTMENT FOR VTR SECTION

### NOTE:

- \*.Begin all adjustment steps from the setup settings
- \*.To adjust or program the EEPROM manually perform the adjustment steps in the order as follows.

### SERVO SECTION

#### 6-1. PG SHIFTER ADJUSTMENT

| CMD        | ADDRESS |                     | MODE                          | M. EQ        |
|------------|---------|---------------------|-------------------------------|--------------|
|            | RAM     | E <sup>2</sup> PROM | (TAPE)                        |              |
| —          | —       | —                   | PLAYBACK<br>(ALIGNMENT        | OSCILLOSCOPE |
| 12         | —       | AE(H)               | TAPE)                         |              |
| SPEC       |         |                     | TP                            |              |
| 6.5 ± 0.5H |         |                     | VIDEO OUT<br>(CL6005:Head sw) |              |

### (Preparation)

1. Disconnect the EVR Fixture from the unit to turn on the Service Information Display..
2. To watch the "PG" data on the TV monitor, push following 3 keys simultaneously for at least 2 seconds.
  - \*. [DATE/TIME "SET"] key... (Top Panel)
  - \*. [RESET] key..... (Top Panel)
  - \*. [DATE, TIME]..... (Side Case): **M621**  
(Front Case): **M622**
3. To turn on the Service Information Display, push following 3 keys simultaneously for at least 2 seconds.
  - \*. [DATE/TIME "SHIFT"] key.. (Top Panel)
  - \*. [RESET] key..... (Top Panel)
  - \*. [DATE, TIME]..... (Side Case): **M621**  
(Front Case): **M622**
4. To turn on the Service Mode 4, push following key 3 times.
  - \*. [DATE, TIME]..... (Side Case): **M621**  
(Front Case): **M622**
5. Connect the oscilloscope to video out and Head sw (CL6005).
6. Playback the alignment tape (Order No. VFK8180HUPF).

### (Adjustment)

7. Push [RESET] or [TAPE] keys on the Top Panel.  
( "DEC" side) ( "INC" side)  
Spec.: VIDEO OUT = 6.5 ± 0.5H (See Fig.C19-1)
8. Take a note "PG" value. (See Fig.C19-2)
9. Connect the EVR Fixture to the unit.
- (Data-Writing)
10. \* (CMD), (1), (2).  
\* (ADR), (\*), (\*) ..... "PG" value (Refer to Step 8.)  
\* (SET).
11. Turn OFF the Power SW.
12. Turn ON the Power SW.

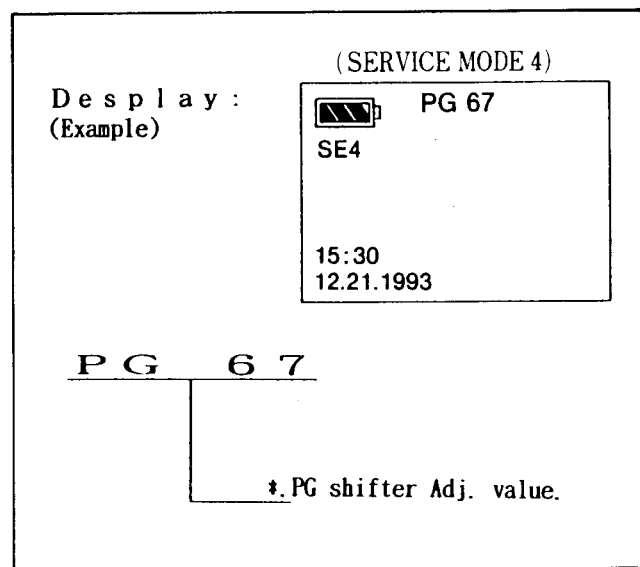


Fig.C19-1

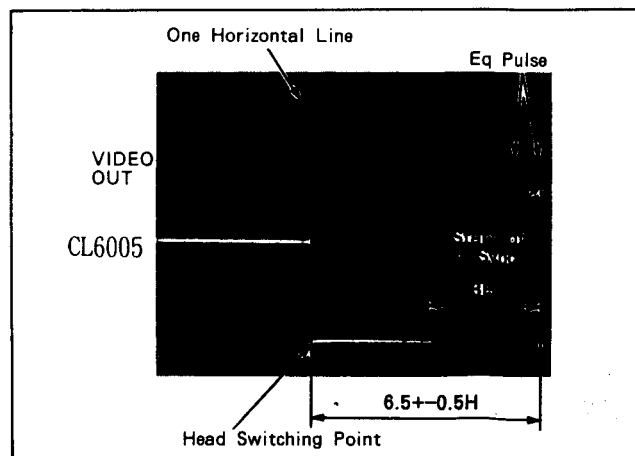


Fig.C19-2

## LUMINANCE & CHROMINANCE SECTION

### 6-2. RECORDING CURRENT ADJUSTMENT

| CMD                                          | ADDRESS          |                     | MODE                                | M. EQ |
|----------------------------------------------|------------------|---------------------|-------------------------------------|-------|
|                                              | RAM              | E <sup>2</sup> PROM |                                     |       |
| 18                                           | BC (C)<br>BD (Y) | _____               | RECORDING OSCILLOSCOPE<br>(SP MODE) |       |
| 12                                           | --               | AB (C)              |                                     |       |
| 02                                           | --               | AB (Y)              |                                     |       |
| SPEC                                         |                  |                     | TP                                  |       |
| CHROMINANCE: <u>14<sup>+2</sup> , mVp-p.</u> |                  |                     | TL5002 (HOT)                        |       |
| LUMINANCE : <u>110 ± 4mVp-p.</u>             |                  |                     | TL5001 (GND)                        |       |
| (B302-14=VFK0734W-14)                        |                  |                     |                                     |       |

(Preparation)

1. Push [SHIFT 1 + 1] keys.....[Iris close.]
2. Connect the jumper wire between TL3005 and B302-14 (5V) to eliminate the Luminance signal.
3. Connect the oscilloscope to TL5001(GND) and TL5002(HOT).
4. Make recording with SP mode.

(Adjustment (Chrominance))

5. \* (CMD), [1], [8].  
\* (ADR), [B], [C].
6. Push [INC] or [DEC] keys  
Spec. : TL5002 =  $14^{+2}_{-2}$  mVp-p.

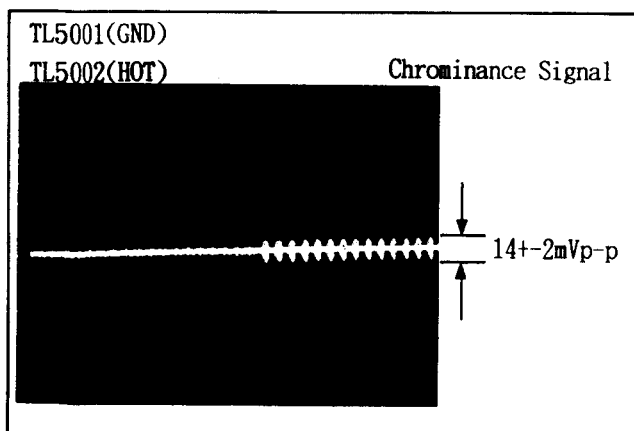


Fig. C20

(Data-Writing (Chrominance))

7. \* (CMD), [1], [2].  
\* (ADR), [A], [B].  
\* (SET).
8. Remove the jumper wire. (TL3003  $\leftrightarrow$  B302-14 (5V))

(Preparation)

9. Make recording in SP mode.

(Adjustment (Luminance))

10. \* (CMD), [1], [8].  
\* (ADR), [B], [D].
11. Push [INC] or [DEC] keys  
Spec. : TL5002 =  $110 \pm 4$  mVp-p.

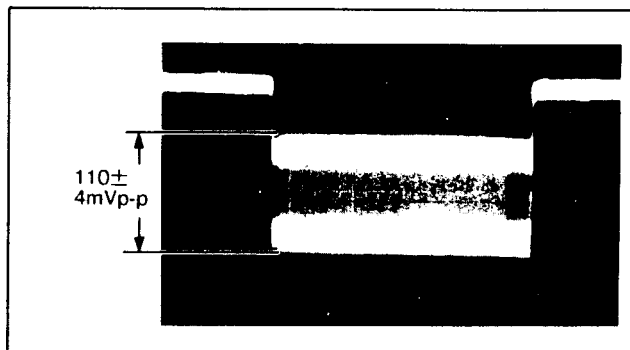


Fig. C21

(Data-Writing (Luminance))

12. \* (CMD), [0], [2].  
\* (ADR), [A], [B].  
\* (SET).
13. Push [SHIFT 1 + 3] keys.....[Iris auto]



## 7. ADDITIONAL USES FOR THE E. V. R.

### 7-1. GENERAL DESCRIPTION

Camera Process section uses a memory IC called a E.E.P.R.O.M (Electrical Erasable Programmable Read Only Memory) that replaces the variable resistor in conventional camera process.

In conventional camera process, each adjustment point was adjusted by turning variable resistor.

In the some adjustment voltage is record in the EEPROM as 8 bit digital data.

The EEPROM supplies the record adjustment voltage to the adjustment point as shown Fig.C22.)

The data in the EEPROM can be easily changed electrically.

The E.V.R has been designed to change the 8 bit digital data of EEPROM in process circuit.

The E.V.R. can also communicate directly with the RAM of the microprocessor to change each control voltage.

In normal operation the EEPROM would send the voltage data to RAM where the digital data is used to change the adjustment values in the various circuits. Using the E.V.R. you can change the data stored in the EEPROM easily there by adjusting the camera process section.

And the E.V.R. can also send the data to RAM directly to confirm the adjustment.

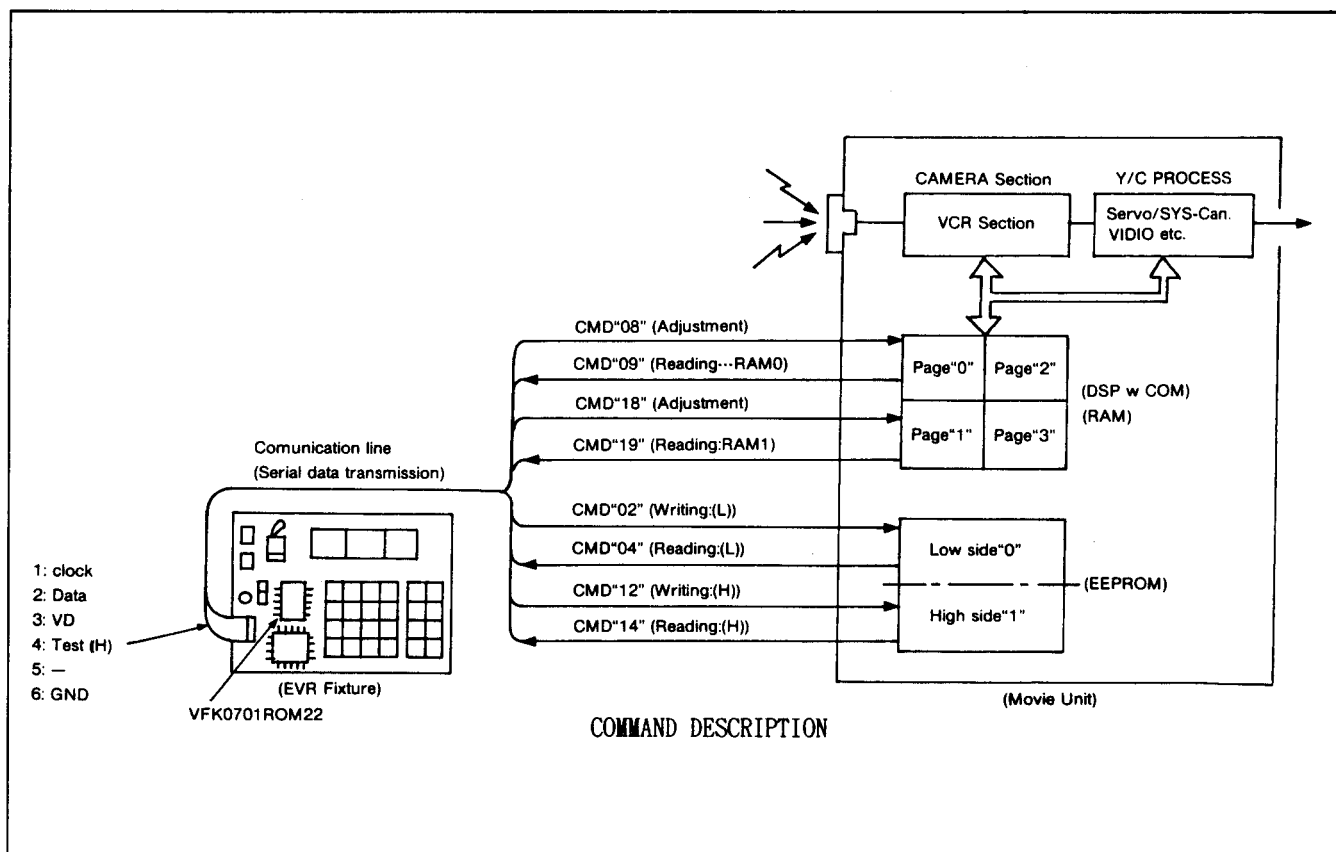


Fig. C22

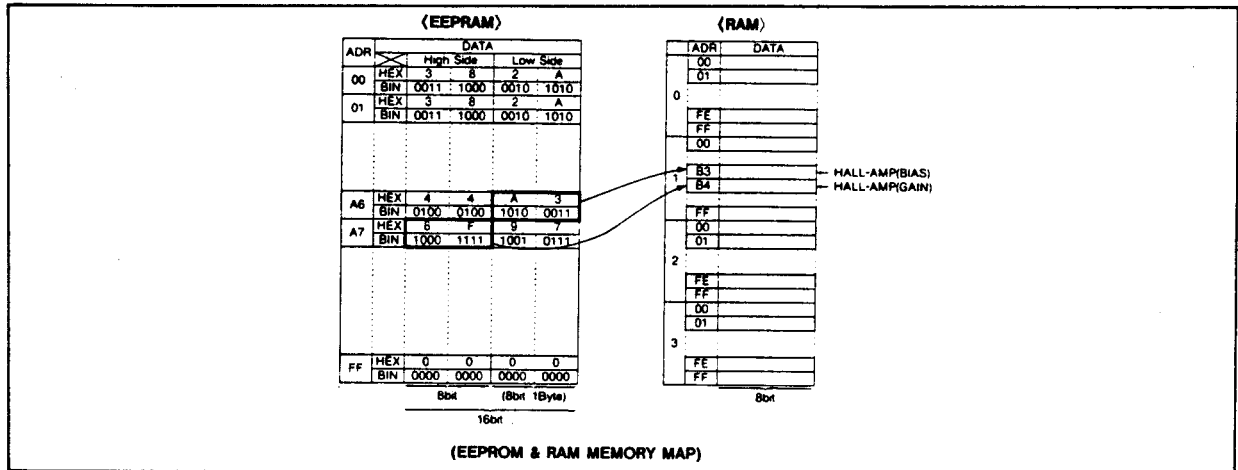


Fig.C23

## 7-2. EEPROM ADDRESS & DATA MAP

The EEPROM ADDRESS & DATA MAP are shown in Fig. C24-1 to Fig.C24-4.

The EEPROM ADDRESS of M621 and M622 are completely same.

However, the Fixed DATA is different according to the models as shown below.

(Automatic Writing)

1. Confirm that ROM of EVR has been replaced with the new one(Part No. : VFK0701ROM22)
2. Confirm that Mode select switch position of EVR is "A" side.
3. Depend on the models, push, [SHIFT 2 + C], [SHIFT 2 + D], [SHIFT 2 + E] or [SHIFT 2 + F] keys at same time.  
(VFK0701ROM22 has 5-type of Fixed/average data according to Model No.)

[SHIFT 2 + C] for M622

[SHIFT 2 + E] for M621

4. The above commands write, fixed data and average data to EEPROM.

### NOTE:

\*Fixed data for each models are slightly different.(See comparison chart.)

Purpose:

To program replacement EEPROM which are supplied unprogrammed.

When replacing the MAIN C.B.A. or IC309(EEPROM), Fixed & Average data must be written.

Symptom of Mis-entered data:

Picture will not appear or will not be the correct picture.

Note 1:

Write fixed data and average data only when replacing the EEPROM or MAIN C.B.A. or when data was destroyed.

| ADDRESS (Digit:High/Low)<br>([#1]~[#10] shows location on the map) |                | 0B   | 0C   | 0D   | 2D   | 3D   | 3D   | 56   | 58   | 59   | F4    |
|--------------------------------------------------------------------|----------------|------|------|------|------|------|------|------|------|------|-------|
| MODEL No.                                                          | [Push Buttons] | [#1] | [#2] | [#3] | [#4] | [#5] | [#6] | [#7] | [#8] | [#9] | [#10] |
| M622                                                               | [SHIFT2 + C]   | 69   | 20   | 25   | A0   | 60   | 10   | FF   | F2   | 07   | A2    |
| M621                                                               | [SHIFT2 + E]   | C7   | 00   | 20   | 70   | 80   | 12   | 00   | E7   | 07   | 12    |

Fig.C25 Fixed data comparison chart

# EEPROM DATA MAP (1)

FX:FIXED  
CA:AUTO CALCULATION  
AD:ADJUSTMENT

| ADR | H/L | DATA | FX | CA | AD | DESCRIPTION                             | ADR | H/L | DATA | FX | CA | AD | DESCRIPTION                                                                         |
|-----|-----|------|----|----|----|-----------------------------------------|-----|-----|------|----|----|----|-------------------------------------------------------------------------------------|
| 00  | H   | 38   | *  |    |    | AWB B-Y GAIN 6000                       | 20  | H   | 38   | *  |    |    | AWB B-Y WHITE BALANCE 6000                                                          |
|     | L   | 2A   | *  |    |    | AWB R-Y GAIN 6000                       |     | L   | 54   | *  |    |    | AWB R-Y WHITE BALANCE 6000                                                          |
| 01  | H   | 38   | *  |    |    | AWB B-Y GAIN 5100                       | 21  | H   | 5F   | *  |    |    | AWB B-Y WHITE BALANCE 5100                                                          |
|     | L   | 2A   | *  |    |    | AWB R-Y GAIN 5100                       |     | L   | 61   | *  |    |    | AWB R-Y WHITE BALANCE 5100                                                          |
| 02  | H   | 3E   | *  |    |    | AWB B-Y GAIN 4500                       | 22  | H   | 76   | *  |    |    | AWB B-Y WHITE BALANCE 4500                                                          |
|     | L   | 29   | *  |    |    | AWB R-Y GAIN 4500                       |     | L   | 5E   | *  |    |    | AWB R-Y WHITE BALANCE 4500                                                          |
| 03  | H   | 4A   | *  |    |    | AWB B-Y GAIN 3600                       | 23  | H   | 86   | *  |    |    | AWB B-Y WHITE BALANCE 3600                                                          |
|     | L   | 2A   | *  |    |    | AWB R-Y GAIN 3600                       |     | L   | 78   | *  |    |    | AWB R-Y WHITE BALANCE 3600                                                          |
| 04  | H   | 38   | *  |    |    | AWB B-Y GAIN MIX                        | 24  | H   | 5F   | *  |    |    | AWB B-Y WHITE BALANCE 4900                                                          |
|     | L   | 2A   | *  |    |    | AWB R-Y GAIN MIX                        |     | L   | 61   | *  |    |    | AWB R-Y WHITE BALANCE 4900                                                          |
| 05  | H   | 5A   | *  |    |    | AWB B-Y GAIN 3100                       | 25  | H   | 96   | *  |    |    | AWB B-Y WHITE BALANCE 3100                                                          |
|     | L   | 29   | *  |    |    | AWB R-Y GAIN 3100                       |     | L   | 97   | *  |    |    | AWB R-Y WHITE BALANCE 3100                                                          |
| 06  | H   | 5A   | *  |    |    | AWB B-Y GAIN 2800                       | 26  | H   | A2   | *  |    |    | AWB B-Y WHITE BALANCE 2800                                                          |
|     | L   | 29   | *  |    |    | AWB R-Y GAIN 2800                       |     | L   | B7   | *  |    |    | AWB R-Y WHITE BALANCE 2800                                                          |
| 07  | H   | 00   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA      | 27  | H   | 38   | *  |    |    | AWB B-Y WHITE BALANCE LOW LIMIT                                                     |
|     | L   | 00   | *  |    |    |                                         |     | L   | 54   | *  |    |    | AWB R-Y WHITE BALANCE LOW LIMIT                                                     |
| 08  | H   | 0C   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA      | 28  | H   | 5F   | *  |    |    | AWB B-Y WHITE BALANCE HIGH LIMIT                                                    |
|     | L   | 0C   | *  |    |    |                                         |     | L   | 61   | *  |    |    | AWB R-Y WHITE BALANCE HIGH LIMIT                                                    |
| 09  | H   | 05   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA      | 29  | H   | A0   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA                                                  |
|     | L   | 40   | *  |    |    |                                         |     | L   | 28   | *  |    |    |                                                                                     |
| 0A  | H   | 10   | *  |    |    | LOW LIGHT CONTROL DATA                  | 2A  | H   | FF   | *  |    |    | MODEL DATA                                                                          |
|     | L   | 86   | *  |    |    |                                         |     | L   | FF   | *  |    |    |                                                                                     |
| 0B  | H   | 40   | *  |    |    | LOW LIGHT CONTROL DATA                  | 2B  | H   | 30   | *  |    |    | AGC (AUTO GAIN CONTROL)<br>CONTROL DATA                                             |
|     | L   | [#1] | *  |    |    |                                         |     | L   | 20   | *  |    |    |                                                                                     |
| 0C  | H   | 40   | *  |    |    | LOW LIGHT CONTROL DATA                  | 2C  | H   | 04   | *  |    |    | ALC CONTROL DATA                                                                    |
|     | L   | [#2] | *  |    |    |                                         |     | L   | FF   | *  |    |    |                                                                                     |
| 0D  | H   | [#3] | *  |    |    | DIS CONTROL DATA                        | 2D  | H   | B6   | *  |    |    | LOW ILLUMINATION<br>CONTROL DATA                                                    |
|     | L   | C0   | *  |    |    |                                         |     | L   | [#4] | *  |    |    |                                                                                     |
| 0E  | H   | 5E   | *  |    |    | DIS CONTROL DATA                        | 2E  | H   | 83   | *  |    |    | ALC (AUTO LIGHT CONTROL)<br>CONTROL DATA                                            |
|     | L   | 48   | *  |    |    |                                         |     | L   | 68   | *  |    |    |                                                                                     |
| 0F  | H   | FF   | *  |    |    | NOT USED                                | 2F  | H   | FF   | *  |    |    | NOT USED                                                                            |
|     | L   | FF   | *  |    |    |                                         |     | L   | FF   | *  |    |    |                                                                                     |
| 10  | H   | 7E   | *  |    |    | AWB B-Y MATRIX 6000                     | 30  | H   | 22   | *  |    |    | AWB B-Y WHITE BALANCE LOW LIMIT 6000                                                |
|     | L   | 66   | *  |    |    | AWB R-Y MATRIX 6000                     |     | L   | 44   | *  |    |    | AWB R-Y WHITE BALANCE LOW LIMIT 6000                                                |
| 11  | H   | 7E   | *  |    |    | AWB B-Y MATRIX 5100                     | 31  | H   | 23   | *  |    |    | AWB B-Y WHITE BALANCE LOW LIMIT 5100                                                |
|     | L   | 66   | *  |    |    | AWB R-Y MATRIX 5100                     |     | L   | 44   | *  |    |    | AWB R-Y WHITE BALANCE LOW LIMIT 5100                                                |
| 12  | H   | 7D   | *  |    |    | AWB B-Y MATRIX 4500                     | 32  | H   | 6C   | *  |    |    | AWB B-Y WHITE BALANCE LOW LIMIT 4500                                                |
|     | L   | 42   | *  |    |    | AWB R-Y MATRIX 4500                     |     | L   | 59   | *  |    |    | AWB R-Y WHITE BALANCE LOW LIMIT 4500                                                |
| 13  | H   | 7D   | *  |    |    | AWB B-Y MATRIX 3600                     | 33  | H   | 77   | *  |    |    | AWB B-Y WHITE BALANCE LOW LIMIT 3600                                                |
|     | L   | 42   | *  |    |    | AWB R-Y MATRIX 3600                     |     | L   | 6F   | *  |    |    | AWB R-Y WHITE BALANCE LOW LIMIT 3600                                                |
| 14  | H   | 7E   | *  |    |    | AWB B-Y MATRIX MIX                      | 34  | H   | 68   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA                                                  |
|     | L   | 66   | *  |    |    | AWB R-Y MATRIX MIX                      |     | L   | 04   | *  |    |    |                                                                                     |
| 15  | H   | 7D   | *  |    |    | AWB B-Y MATRIX 3100                     | 35  | H   | 87   | *  |    |    | AWB B-Y WHITE BALANCE LOW LIMIT 3100                                                |
|     | L   | 42   | *  |    |    | AWB R-Y MATRIX 3100                     |     | L   | 8B   | *  |    |    | AWB R-Y WHITE BALANCE LOW LIMIT 3100                                                |
| 16  | H   | 7D   | *  |    |    | AWB B-Y MATRIX 2800                     | 36  | H   | 91   | *  |    |    | AWB B-Y WHITE BALANCE LOW LIMIT 2800                                                |
|     | L   | 42   | *  |    |    | AWB R-Y MATRIX 2800                     |     | L   | B3   | *  |    |    | AWB R-Y WHITE BALANCE LOW LIMIT 2800                                                |
| 17  | H   | 77   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA      | 37  | H   | 00   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA                                                  |
|     | L   | 02   | *  |    |    |                                         |     | L   | 00   | *  |    |    |                                                                                     |
| 18  | H   | 6F   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA      | 38  | H   | C4   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA                                                  |
|     | L   | 00   | *  |    |    |                                         |     | L   | B3   | *  |    |    |                                                                                     |
| 19  | H   | 10   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA | 39  | H   | AC   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA                                             |
|     | L   | 19   | *  |    |    |                                         |     | L   | 00   | *  |    |    |                                                                                     |
| 1A  | H   | 16   | *  |    |    | DIS CONTROL DATA                        | 3A  | H   | D0   | *  |    |    | PICTURE QUALITY<br>CONTROL DATA<br>(VERTICAL APERTURE/<br>HORIZONTAL APERTURE etc.) |
|     | L   | 13   | *  |    |    |                                         |     | L   | 25   | *  |    |    |                                                                                     |
| 1B  | H   | 56   | *  |    |    | NOT USED                                | 3B  | H   | 82   | *  |    |    | PICTURE QUALITY<br>CONTROL DATA<br>(VERTICAL APERTURE/<br>HORIZONTAL APERTURE etc.) |
|     | L   | FF   | *  |    |    |                                         |     | L   | 31   | *  |    |    |                                                                                     |
| 1C  | H   | FF   | *  |    |    | NOT USED                                | 3C  | H   | 06   | *  |    |    | PICTURE QUALITY<br>CONTROL DATA<br>(VERTICAL APERTURE/<br>HORIZONTAL APERTURE etc.) |
|     | L   | FF   | *  |    |    |                                         |     | L   | D0   | *  |    |    |                                                                                     |
| 1D  | H   | 30   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA | 3D  | H   | [#5] | *  |    |    | PICTURE QUALITY<br>CONTROL DATA<br>(VERTICAL APERTURE/<br>HORIZONTAL APERTURE etc.) |
|     | L   | FF   | *  |    |    |                                         |     | L   | [#6] | *  |    |    |                                                                                     |
| 1E  | H   | 08   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA | 3E  | H   | 20   | *  |    |    | PICTURE QUALITY<br>CONTROL DATA<br>(VERTICAL APERTURE/<br>HORIZONTAL APERTURE etc.) |
|     | L   | 24   | *  |    |    |                                         |     | L   | 10   | *  |    |    |                                                                                     |
| 1F  | H   | FF   | *  |    |    | NOT USED                                | 3F  | H   | FF   | *  |    |    | NOT USED                                                                            |
|     | L   | FF   | *  |    |    |                                         |     | L   | FF   | *  |    |    |                                                                                     |

Fig.C24-1

## EEPROM DATA MAP (2)

FX:FIXED  
CA:AUTO CALCULATION  
AD:ADJUSTMENT

| ADR | H/L | DATA | FX | CA | AD | DESCRIPTION                                                      | ADR | H/L | DATA | FX | CA | AD | DESCRIPTION                                                        |
|-----|-----|------|----|----|----|------------------------------------------------------------------|-----|-----|------|----|----|----|--------------------------------------------------------------------|
| 40  | H   | 23   | *  |    |    | AWB B-Y HIGH LIMIT 6000                                          | 60  | H   | 90   | *  |    |    | PICTURE QUALITY CONTROL DATA<br>(HORIZONTAL/VERTICAL APERTURE etc) |
|     | L   | 6E   | *  |    |    | AWB R-Y HIGH LIMIT 6000                                          |     | L   | 12   | *  |    |    |                                                                    |
| 41  | H   | 6B   | *  |    |    | AWB B-Y HIGH LIMIT 5100                                          | 61  | H   | 82   | *  |    |    | NOT USED                                                           |
|     | L   | 6E   | *  |    |    | AWB R-Y HIGH LIMIT 5100                                          |     | L   | 05   | *  |    |    |                                                                    |
| 42  | H   | 91   | *  |    |    | AWB B-Y HIGH LIMIT 4500                                          | 62  | H   | DB   | *  |    |    | ALC (AUTO LIGHT CONTROL)<br>CONTROL DATA                           |
|     | L   | 6E   | *  |    |    | AWB R-Y HIGH LIMIT 4500                                          |     | L   | FF   | *  |    |    |                                                                    |
| 43  | H   | A5   | *  |    |    | AWB B-Y HIGH LIMIT 3600                                          | 63  | H   | F3   | *  |    |    | AGC(AUTO GAIN CONTROL)<br>CONTROL DATA                             |
|     | L   | 8A   | *  |    |    | AWB R-Y HIGH LIMIT 3600                                          |     | L   | E6   | *  |    |    |                                                                    |
| 44  | H   | 08   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA                               | 64  | H   | CD   | *  |    |    | LOW ILLUMINATION CONTROL DATA                                      |
|     | L   | 19   | *  |    |    |                                                                  |     | L   | B3   | *  |    |    |                                                                    |
| 45  | H   | B5   | *  |    |    | AWB B-Y HIGH LIMIT 3100                                          | 65  | H   | 24   | *  |    |    | PICTURE QUALITY/ALC CONTROL DATA<br>AE CONTROL DATA                |
|     | L   | B3   | *  |    |    | AWB R-Y HIGH LIMIT 3100                                          |     | L   | 90   | *  |    |    |                                                                    |
| 46  | H   | C4   | *  |    |    | AWB B-Y HIGH LIMIT 2800                                          | 66  | H   | 02   | *  |    |    | AUTO WHITE BALANCE CONTROL DATA                                    |
|     | L   | E2   | *  |    |    | AWB R-Y HIGH LIMIT 2800                                          |     | L   | 10   | *  |    |    |                                                                    |
| 47  | H   | 00   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA                               | 67  | H   | 08   | *  |    |    | SPORTS MODE CONTROL DATA<br>NOT USED                               |
|     | L   | 00   | *  |    |    |                                                                  |     | L   | 12   | *  |    |    |                                                                    |
| 48  | H   | 00   | *  |    |    | AWB R-Y AXIS SEARCH VALUE                                        | 68  | H   | 30   | *  |    |    | NOT USED                                                           |
|     | L   | 6E   | *  |    |    | AWB R-Y AXIS SEARCH VALUE                                        |     | L   | 50   | *  |    |    |                                                                    |
| 49  | H   | 00   | *  |    |    | AUTO WHITE BALANCE<br>CONTROL DATA                               | 69  | H   | FF   | *  |    |    | PICTURE QUALITY CONTROL DATA                                       |
|     | L   | 02   | *  |    |    |                                                                  |     | L   | FF   | *  |    |    |                                                                    |
| 4A  | H   | 40   | *  |    |    | ALC (AUTO LIGHT CONTROL)<br>CONTROL DATA                         | 6A  | H   | 2C   | *  |    |    | LOW ILLUMINATION CONTROL DATA                                      |
|     | L   | E0   | *  |    |    |                                                                  |     | L   | 2F   | *  |    |    |                                                                    |
| 4B  | H   | 50   | *  |    |    | ALC (AUTO LIGHT CONTROL)<br>CONTROL DATA                         | 6B  | H   | 00   | *  |    |    | NOT USED                                                           |
|     | L   | 08   | *  |    |    |                                                                  |     | L   | 00   | *  |    |    |                                                                    |
| 4C  | H   | 40   | *  |    |    | ALC (AUTO LIGHT CONTROL)<br>CONTROL DATA                         | 6C  | H   | 00   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA                            |
|     | L   | 0D   | *  |    |    |                                                                  |     | L   | 00   | *  |    |    |                                                                    |
| 4D  | H   | 13   | *  |    |    | PICTURE QUALITY<br>CONTROL DATA                                  | 6D  | H   | FF   | *  |    |    | NOT USED                                                           |
|     | L   | 11   | *  |    |    |                                                                  |     | L   | FF   | *  |    |    |                                                                    |
| 4E  | H   | D0   | *  |    |    | NOT USED                                                         | 6E  | H   | FF   | *  |    |    | PICTURE QUALITY CONTROL DATA                                       |
|     | L   | 00   | *  |    |    |                                                                  |     | L   | FF   | *  |    |    |                                                                    |
| 4F  | H   | FF   | *  |    |    | NOT USED                                                         | 6F  | H   | FF   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA                            |
|     | L   | FF   | *  |    |    |                                                                  |     | L   | FF   | *  |    |    |                                                                    |
| 50  | H   | 75   | *  |    |    | BACK UP DATA<br>(WHITE SET/AUTO FOCUS MODE)                      | 70  | H   | 12   | *  |    |    | PICTURE QUALITY CONTROL DATA                                       |
|     | L   | 82   | *  |    |    |                                                                  |     | L   | C5   | *  |    |    |                                                                    |
| 51  | H   | B6   | *  |    |    | BACK UP DATA (VTR MODE)                                          | 71  | H   | 11   | *  |    |    | NOT USED                                                           |
|     | L   | C9   | *  |    |    |                                                                  |     | L   | 0E   | *  |    |    |                                                                    |
| 52  | H   | 77   | *  |    |    | NOT USED                                                         | 72  | H   | 03   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA                            |
|     | L   | 63   | *  |    |    |                                                                  |     | L   | 03   | *  |    |    |                                                                    |
| 53  | H   | FF   | *  |    |    | NOT USED                                                         | 73  | H   | 39   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA                            |
|     | L   | FF   | *  |    |    |                                                                  |     | L   | 46   | *  |    |    |                                                                    |
| 54  | H   | FF   | *  |    |    | NOT USED                                                         | 74  | H   | E6   | *  |    |    | PICTURE QUALITY CONTROL DATA                                       |
|     | L   | FF   | *  |    |    |                                                                  |     | L   | 06   | *  |    |    |                                                                    |
| 55  | H   | 0F   | *  |    |    | NOT USED DATA                                                    | 75  | H   | E6   | *  |    |    | NOT USED                                                           |
|     | L   | FF   | *  |    |    |                                                                  |     | L   | E6   | *  |    |    |                                                                    |
| 56  | H   | 10   | *  |    |    | LOW ILLUMINATION APERTURE &<br>CHROMINANCE SUPPRESS CONTROL DATA | 76  | H   | 0A   | *  |    |    | PICTURE QUALITY CONTROL DATA                                       |
|     | L   | [#7] | *  |    |    |                                                                  |     | L   | 28   | *  |    |    |                                                                    |
| 57  | H   | FF   | *  |    |    | PICUTURE QUALITY CONTROL DATA                                    | 77  | H   | A0   | *  |    |    | ALC(AUTO LIGHT CONTROL)<br>CONTROL DATA                            |
|     | L   | FF   | *  |    |    |                                                                  |     | L   | 3C   | *  |    |    |                                                                    |
| 58  | H   | [#8] | *  |    |    | PICUTURE QUALITY/ALC CONTROL DATA                                | 78  | H   | 50   | *  |    |    | NOT USED                                                           |
|     | L   | 8C   | *  |    |    |                                                                  |     | L   | 20   | *  |    |    |                                                                    |
| 59  | H   | [#9] | *  |    |    | SYSTEM CONTROL DATA(ALC/VTR MODE etc)                            | 79  | H   | 2F   | *  |    |    | PICTURE QUALITY CONTROL DATA                                       |
|     | L   | 7C   | *  |    |    |                                                                  |     | L   | 19   | *  |    |    |                                                                    |
| 5A  | H   | E8   | *  |    |    | AUTO WHITE BALANCE CONTROL DATA                                  | 7A  | H   | 46   | *  |    |    | NOT USED                                                           |
|     | L   | 41   | *  |    |    |                                                                  |     | L   | 32   | *  |    |    |                                                                    |
| 5B  | H   | 9F   | *  |    |    | ALC (AUTO LIGHT CONTROL)<br>CONTROL DATA                         | 7B  | H   | 05   | *  |    |    | PICTURE QUALITY CONTROL DATA                                       |
|     | L   | 7B   | *  |    |    |                                                                  |     | L   | 46   | *  |    |    |                                                                    |
| 5C  | H   | 5C   | *  |    |    | ALC (AUTO LIGHT CONTROL)<br>CONTROL DATA                         | 7C  | H   | 02   | *  |    |    | NOT USED                                                           |
|     | L   | 4F   | *  |    |    |                                                                  |     | L   | E6   | *  |    |    |                                                                    |
| 5D  | H   | 0B   | *  |    |    | AGC AGC CHARACTERISTIC CURVE(SLOPE)                              | 7D  | H   | 15   | *  |    |    | PICTURE QUALITY CONTROL DATA                                       |
|     | L   | 03   | *  |    |    |                                                                  |     | L   | 53   | *  |    |    |                                                                    |
| 5E  | H   | 28   | *  |    |    | AGC (AUTO GAIN CONTROL) CONTROL DATA                             | 7E  | H   | 06   | *  |    |    | NOT USED                                                           |
|     | L   | 20   | *  |    |    |                                                                  |     | L   | 01   | *  |    |    |                                                                    |
| 5F  | H   | FF   | *  |    |    | NOT USED                                                         | 7F  | H   | FF   | *  |    |    | NOT USED                                                           |
|     | L   | FF   | *  |    |    |                                                                  |     | L   | FF   | *  |    |    |                                                                    |

Fig. C24-2

# EEPROM DATA MAP (3)

FX: FIXED  
CA: AUTO CALCULATION  
AD: ADJUSTMENT

| ADR | H/L | DATA | FX | CA | AD | DESCRIPTION                                                                                                     | ADR | H/L | DATA | FX | CA | AD | DESCRIPTION                                                              |                                                                                        |
|-----|-----|------|----|----|----|-----------------------------------------------------------------------------------------------------------------|-----|-----|------|----|----|----|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 80  | H   | 00   | *  |    |    | SYSTEM CONTROL DATA                                                                                             | A0  | H   | FF   | *  |    |    | NOT USED                                                                 |                                                                                        |
|     | L   | 6C   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          |                                                                                        |
| 81  | H   | 00   | *  |    |    |                                                                                                                 | A1  | H   | FF   | *  |    |    |                                                                          |                                                                                        |
|     | L   | 00   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          |                                                                                        |
| 82  | H   | 00   | *  |    |    | NOT USED                                                                                                        | A2  | H   | FF   | *  |    |    | NOT USED                                                                 |                                                                                        |
|     | L   | FF   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          |                                                                                        |
| 83  | H   | FF   | *  |    |    |                                                                                                                 | A3  | H   | FF   | *  |    |    |                                                                          |                                                                                        |
|     | L   | 00   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          |                                                                                        |
| 84  | H   | 19   | *  |    |    | SYSTEM CONTROL DATA<br>(INDICATOR OUTPUT ADDRESS (0~9))                                                         | A4  | H   | 63   | *  |    |    | ALC                                                                      | ALC TARGET DATA                                                                        |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          | NOT USED DATA                                                                          |
| 85  | H   | 18   | *  |    |    |                                                                                                                 | A5  | H   | AE   | *  |    |    | V-SUB                                                                    | V-SUB CONTROL DATA                                                                     |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | C7   | *  |    |    | A. FOCUS                                                                 | ZOOM ENCODER (-) DATA                                                                  |
| 86  | H   | 43   | *  |    |    |                                                                                                                 | A6  | H   | 44   | *  |    |    | A. FOCUS                                                                 | ZOOM ENCODER (+) DATA                                                                  |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | A3   | *  |    |    | ALC                                                                      | HALL AMP BIAS DATA                                                                     |
| 87  | H   | 42   | *  |    |    |                                                                                                                 | A7  | H   | 8F   | *  |    |    | ALC                                                                      | HALL AMP GAIN DATA                                                                     |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | 97   | *  |    |    | ALC                                                                      | PWM BIAS DATA                                                                          |
| 88  | H   | 41   | *  |    |    |                                                                                                                 | A8  | H   | 87   | *  |    |    | PEDESTAL                                                                 | PEDESTAL (LOW CLIP) CONTROL DATA                                                       |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | 44   | *  |    |    | AGC                                                                      | AGC OFFSET DATA                                                                        |
| 89  | H   | 40   | *  |    |    |                                                                                                                 | A9  | H   | 93   | *  |    |    | A/D                                                                      | A/D INPUT LEVEL DATA                                                                   |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | 3E   | *  |    |    | Y-CLIP                                                                   | Y-CLIP (SYNC LEVEL) DATA                                                               |
| 8A  | H   | 94   | *  |    |    |                                                                                                                 | AA  | H   | 6D   | *  |    |    | R-Y C. B.                                                                | R-Y CARRIER BALANCE DATA                                                               |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | 6F   | *  |    |    | B-Y C. B.                                                                | B-Y CARRIER BALANCE DATA                                                               |
| 8B  | H   | 95   | *  |    |    |                                                                                                                 | AB  | H   | 2E   | *  |    |    | REC. C                                                                   | RECORDING CURRENT (CHROMI.) DATA                                                       |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | 74   | *  |    |    | REC. Y                                                                   | RECORDING CURRENT (LUMI.) DATA                                                         |
| 8C  | H   | 34   | *  |    |    | FOCUS & ZOOM CONTROL DATA<br>(SEARCH/WIDE, TELE LIMITOR/<br>ZOOM SPEED/FOCUS ZONE:<br>VERTICAL/HORIZONTAL)etc.) | AC  | H   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
| 8D  | H   | 35   | *  |    |    |                                                                                                                 | AD  | H   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
|     | L   | 03   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
| 8E  | H   | 30   | *  |    |    |                                                                                                                 | AE  | H   | 79   | *  |    |    | PG SFT.                                                                  | PG SHIFTER DATA                                                                        |
|     | L   | 20   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
| 8F  | H   | 33   | *  |    |    |                                                                                                                 | AF  | H   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
|     | L   | 66   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
| 90  | H   | F5   | *  |    |    |                                                                                                                 | B0  | H   | F2   | *  |    |    | A. FOCUS                                                                 | FREE ADDRESS (REFERENCE POINT)                                                         |
|     | L   | 05   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
| 91  | H   | 20   | *  |    |    |                                                                                                                 | B1  | H   | FA   | *  |    |    | A. FOCUS                                                                 | 5 POINT ADJUSTMENT (M VALUE)                                                           |
|     | L   | 10   | *  |    |    |                                                                                                                 |     | L   | 01   | *  |    |    | A. FOCUS                                                                 | 5 POINT ADJUSTMENT (N VALUE)                                                           |
| 92  | H   | 00   | *  |    |    |                                                                                                                 | B2  | H   | F0   | *  |    |    | A. FOCUS                                                                 | ZOOM SPEED CORRECTION VALUE                                                            |
|     | L   | 04   | *  |    |    |                                                                                                                 |     | L   | 00   | *  |    |    |                                                                          | DIGITAL ZOOM CONTROL DATA                                                              |
| 93  | H   | 28   | *  |    |    |                                                                                                                 | B3  | H   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
|     | L   | 78   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
| 94  | H   | 41   | *  |    |    |                                                                                                                 | B4  | H   | 09   | *  |    |    |                                                                          | ZOOM & FOCUS CONTROL DATA<br>(TRACKING CURVE/FLICKER)                                  |
|     | L   | 71   | *  |    |    |                                                                                                                 |     | L   | 40   | *  |    |    |                                                                          | NOT USED                                                                               |
| 95  | H   | 01   | *  |    |    |                                                                                                                 | B5  | H   | FF   | *  |    |    |                                                                          | FOCUS CONTROL DATA (VL DATA)                                                           |
|     | L   | 04   | *  |    |    |                                                                                                                 |     | L   | B0   | *  |    |    |                                                                          | NOT USED                                                                               |
| 96  | H   | 01   | *  |    |    |                                                                                                                 | B6  | H   | 00   | *  |    |    |                                                                          | FOCUS CONTROL DATA                                                                     |
|     | L   | 08   | *  |    |    |                                                                                                                 |     | L   | 12   | *  |    |    |                                                                          | DIS(DIGITAL IMAGE STABILIZER)CONTROL DATA                                              |
| 97  | H   | 02   | *  |    |    |                                                                                                                 | B7  | H   | 15   | *  |    |    |                                                                          | NOT USED                                                                               |
|     | L   | 08   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          | NOT USED                                                                               |
| 98  | H   | A0   | *  |    |    | DIS(DIGITAL IMAGE STABILIZER)CONTROL DATA<br>(DIGITAL ZOOM ⇔ DIS SWITCHING TIMING etc)                          | B8  | H   | 31   | *  |    |    |                                                                          | DIS(DIGITAL IMAGE STABILIZER)CONTROL DATA<br>(DIGITAL ZOOM ⇔ DIS SWITCHING TIMING etc) |
|     | L   | 80   | *  |    |    |                                                                                                                 |     | L   | A2   | *  |    |    |                                                                          |                                                                                        |
| 99  | H   | 00   | *  |    |    |                                                                                                                 | B9  | H   | 15   | *  |    |    |                                                                          |                                                                                        |
|     | L   | 05   | *  |    |    |                                                                                                                 |     | L   | 30   | *  |    |    |                                                                          |                                                                                        |
| 9A  | H   | 14   | *  |    |    |                                                                                                                 | BA  | H   | 15   | *  |    |    | DIS(DIGITAL IMAGE STABILIZER)CONTROL DATA<br>(TIME RAG/ CORRECTION etc.) |                                                                                        |
|     | L   | 28   | *  |    |    |                                                                                                                 |     | L   | 30   | *  |    |    |                                                                          |                                                                                        |
| 9B  | H   | 06   | *  |    |    |                                                                                                                 | BB  | H   | 13   | *  |    |    |                                                                          |                                                                                        |
|     | L   | 02   | *  |    |    |                                                                                                                 |     | L   | 30   | *  |    |    |                                                                          |                                                                                        |
| 9C  | H   | 03   | *  |    |    |                                                                                                                 | BC  | H   | 10   | *  |    |    | NOT USED                                                                 |                                                                                        |
|     | L   | 0A   | *  |    |    |                                                                                                                 |     | L   | 30   | *  |    |    |                                                                          |                                                                                        |
| 9D  | H   | 1A   | *  |    |    |                                                                                                                 | BD  | H   | FF   | *  |    |    |                                                                          |                                                                                        |
|     | L   | 40   | *  |    |    |                                                                                                                 |     | L   | 55   | *  |    |    |                                                                          |                                                                                        |
| 9E  | H   | 01   | *  |    |    | NOT USED                                                                                                        | BE  | H   | 80   | *  |    |    | DIS(DIGITAL IMAGE STABILIZER)CONTROL DATA<br>(D. ZOOM MAX. VALUE etc.)   |                                                                                        |
|     | L   | 08   | *  |    |    |                                                                                                                 |     | L   | FF   | *  |    |    |                                                                          |                                                                                        |
| 9F  | H   | 96   | *  |    |    |                                                                                                                 | BF  | H   | 55   | *  |    |    | DIS(DIGITAL IMAGE STABILIZER)CONTROL DATA<br>(D. ZOOM MAX. VALUE etc.)   |                                                                                        |
|     | L   | 99   | *  |    |    |                                                                                                                 |     | L   | 66   | *  |    |    |                                                                          |                                                                                        |

Fig. C24-3

# EEPROM DATA MAP (4)

FX:FIXED  
CA:AUTO CALCULATION  
AD:ADJUSTMENT

| ADR | H/L | DATA | FX | CA | AD | DESCRIPTION                                                                                                                             | ADR | H/L | DATA | FX | CA | AD | DESCRIPTION                         |
|-----|-----|------|----|----|----|-----------------------------------------------------------------------------------------------------------------------------------------|-----|-----|------|----|----|----|-------------------------------------|
| C0  | H   | 22   | *  |    |    | FOCUS & ZOOM CONTROL DATA<br>(ZOOM FILTER/OVER-RUN CORRECTION/<br>F VALUE/FLICKER/WIDE, TELE SPEED/<br>TRACKING CALCULATION VALUE etc.) | E0  | H   | 11   | *  |    |    | WHITE BALANCE SHIFT VALUE (INDOOR)  |
|     | L   | 22   | *  |    |    |                                                                                                                                         |     | L   | 11   | *  |    |    |                                     |
| C1  | H   | 22   | *  |    |    |                                                                                                                                         | E1  | H   | 11   | *  |    |    |                                     |
|     | L   | 33   | *  |    |    |                                                                                                                                         |     | L   | 22   | *  |    |    |                                     |
| C2  | H   | 01   | *  |    |    |                                                                                                                                         | E2  | H   | 33   | *  |    |    |                                     |
|     | L   | 08   | *  |    |    |                                                                                                                                         |     | L   | 43   | *  |    |    |                                     |
| C3  | H   | 60   | *  |    |    |                                                                                                                                         | E3  | H   | 44   | *  |    |    | WHITE BALANCE SHIFT VALUE (OUTDOOR) |
|     | L   | 12   | *  |    |    |                                                                                                                                         |     | L   | 44   | *  |    |    |                                     |
| C4  | H   | 01   | *  |    |    |                                                                                                                                         | E4  | H   | 22   | *  |    |    |                                     |
|     | L   | A0   | *  |    |    |                                                                                                                                         |     | L   | 22   | *  |    |    |                                     |
| C5  | H   | 00   | *  |    |    |                                                                                                                                         | E5  | H   | 22   | *  |    |    |                                     |
|     | L   | F1   | *  |    |    |                                                                                                                                         |     | L   | 33   | *  |    |    |                                     |
| C6  | H   | D4   | *  |    |    |                                                                                                                                         | E6  | H   | 44   | *  |    |    | AUTO FOCUS CONTROL DATA             |
|     | L   | EA   | *  |    |    |                                                                                                                                         |     | L   | 55   | *  |    |    |                                     |
| C7  | H   | 01   | *  |    |    |                                                                                                                                         | E7  | H   | 66   | *  |    |    |                                     |
|     | L   | 10   | *  |    |    |                                                                                                                                         |     | L   | 77   | *  |    |    |                                     |
| C8  | H   | 32   | *  |    |    |                                                                                                                                         | E8  | H   | 50   | *  |    |    | ZOOM CONTROL DATA                   |
|     | L   | FF   | *  |    |    |                                                                                                                                         |     | L   | A0   | *  |    |    |                                     |
| C9  | H   | 05   | *  |    |    |                                                                                                                                         | E9  | H   | 4B   | *  |    |    |                                     |
|     | L   | 80   | *  |    |    |                                                                                                                                         |     | L   | 08   | *  |    |    |                                     |
| CA  | H   | 60   | *  |    |    |                                                                                                                                         | EA  | H   | FF   | *  |    |    | NOT USED                            |
|     | L   | 2C   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    |                                     |
| CB  | H   | B0   | *  |    |    |                                                                                                                                         | EB  | H   | FF   | *  |    |    |                                     |
|     | L   | 70   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    |                                     |
| CC  | H   | 10   | *  |    |    |                                                                                                                                         | EC  | H   | FF   | *  |    |    |                                     |
|     | L   | 10   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    |                                     |
| CD  | H   | 22   | *  |    |    | NOT USED                                                                                                                                | ED  | H   | 00   | *  |    |    | MODEL DATA (PRODUCTS/D. ZOOM etc.)  |
|     | L   | 22   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    | NOT USED                            |
| CE  | H   | 32   | *  |    |    |                                                                                                                                         | EE  | H   | FF   | *  |    |    |                                     |
|     | L   | 33   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    |                                     |
| CF  | H   | 76   | *  |    |    |                                                                                                                                         | EF  | H   | 8C   | *  |    |    | MODEL DATA (MODEL NO. etc.)         |
|     | L   | 77   | *  |    |    |                                                                                                                                         |     | L   | 4E   | *  |    |    | NOT USED                            |
| D0  | H   | 00   | *  |    |    |                                                                                                                                         | F0  | H   | FF   | *  |    |    |                                     |
|     | L   | 00   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    |                                     |
| D1  | H   | 12   | *  |    |    |                                                                                                                                         | F1  | H   | 00   | *  |    |    | PRODUCTS INFORMATION                |
|     | L   | 01   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    | NOT USED                            |
| D2  | H   | 00   | *  |    |    |                                                                                                                                         | F2  | H   | 00   | *  |    |    | PRODUCTS INFORMATION                |
|     | L   | 00   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    | NOT USED                            |
| D3  | H   | 45   | *  |    |    |                                                                                                                                         | F3  | H   | 00   | *  |    |    | PRODUCTS INFORMATION                |
|     | L   | 22   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    | NOT USED                            |
| D4  | H   | 11   | *  |    |    |                                                                                                                                         | F4  | H   | #10  | *  |    |    | PRODUCTS INFORMATION                |
|     | L   | 01   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    | NOT USED                            |
| D5  | H   | 23   | *  |    |    |                                                                                                                                         | F5  | H   | 00   | *  |    |    | PRODUCTS INFORMATION                |
|     | L   | 11   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    | NOT USED                            |
| D6  | H   | 00   | *  |    |    |                                                                                                                                         | F6  | H   | 00   | *  |    |    | PRODUCTS INFORMATION                |
|     | L   | 00   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    | NOT USED                            |
| D7  | H   | 34   | *  |    |    |                                                                                                                                         | F7  | H   | 00   | *  |    |    | PRODUCTS INFORMATION                |
|     | L   | 22   | *  |    |    |                                                                                                                                         |     | L   | FF   | *  |    |    | NOT USED                            |
| D8  | H   | 11   | *  |    |    |                                                                                                                                         | F8  | H   | 00   | *  |    |    | PRODUCTS INFORMATION                |
|     | L   | 01   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    |                                     |
| D9  | H   | 01   | *  |    |    |                                                                                                                                         | F9  | H   | 00   | *  |    |    |                                     |
|     | L   | 32   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    |                                     |
| DA  | H   | FF   | *  |    |    |                                                                                                                                         | FA  | H   | 00   | *  |    |    |                                     |
|     | L   | FF   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    |                                     |
| DB  | H   | FF   | *  |    |    |                                                                                                                                         | FB  | H   | 00   | *  |    |    |                                     |
|     | L   | FF   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    |                                     |
| DC  | H   | FF   | *  |    |    |                                                                                                                                         | FC  | H   | 00   | *  |    |    |                                     |
|     | L   | FF   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    |                                     |
| DD  | H   | FF   | *  |    |    |                                                                                                                                         | FD  | H   | 00   | *  |    |    | NOT USED                            |
|     | L   | FF   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    |                                     |
| DE  | H   | FF   | *  |    |    |                                                                                                                                         | FE  | H   | 00   | *  |    |    |                                     |
|     | L   | FF   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    |                                     |
| DF  | H   | FF   | *  |    |    |                                                                                                                                         | FF  | H   | 00   | *  |    |    |                                     |
|     | L   | FF   | *  |    |    |                                                                                                                                         |     | L   | 00   | *  |    |    |                                     |

Fig. C24-4

MAIN C. B. A.

Head SW

CL6005

CL6002

CL6208

CL6207

CL6209

CL6211

CL6210

CL6009

CL6006

CL1014

CL1011

TL1001

CL1007

CL1010

CL1008

CL1009

CL6010

CL301

CL302

CL204

CL317

CL318

CL316

CL319

CL313

CL312

CL315

CL314

CL308

CL306

CL307

CL309

CL310

CL318

CL3003

CL8004

CL8014

CL3017

CL3020

CL3009

CL1013

CL8008

CL3016

CL8009

CL8010

CL8001

TL3004

CL3012

CL3013

CL3019

CL3025

CL3021

CL3010

CL3007

CL3024

CL3001

CL3002

CL3003

CL3004

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CL3294

CL3295

CL3296

CL3297

CL3298

CL3299

CL3300

CL3301

CL3302

CL3303

CL3304

— 27 —

# Service Service Service

M622/01



V00723



# Service Manual



For technical data reference is made to the Service Manual of M621/21 (4822 726 15093) and E.V.R adjustment Service Manual for M621 & M622 (4822 726 15103).

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New Circuit diagrams

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Camcorder set M622/21 consists of:

- M622/01  
- 22AV5226  
- 22AV5227  
- 22AV5171

Camcorder  
A/C adapter  
Rechargeable Battery 4.8V/1.2Ah  
Carrying strap

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.



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### Parts-list

|    |                                  |
|----|----------------------------------|
| 23 | Mechanical replacement partslist |
|    | Electrical replacement partslist |

Note: Luminance/Chrominance & Head Amplifier schematic diagram for M622 is same as M621

## SPECIFICATION

| TECHNICAL DATA M622        |                                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>General</b>             |                                                                                                                      |
| Voltage                    | 4.8V DC                                                                                                              |
| Power                      | 5.8W (Record, battery mode)                                                                                          |
| Video recording system     | PAL                                                                                                                  |
| Audio FM recording system  | Not used                                                                                                             |
| Normal Audio system        | Mono                                                                                                                 |
| Tape format                | VHS-C (12.7mm)                                                                                                       |
| <b>Camera part</b>         |                                                                                                                      |
| Pick up element            | CCD                                                                                                                  |
| Standard illumination      | 1400 lux                                                                                                             |
| Minimum requ. illumination | 3 Lux                                                                                                                |
| Image sensor               | 1/4 inch CCD                                                                                                         |
| Lens                       | Built in 10:1 variable speed power zoom lens with digital AI auto focus, auto iris F1.8 (4,6-46mm) filter diam. 37mm |
| <b>View finder</b>         | 0.5 inch Electronic Viewfinder                                                                                       |
| <b>Video</b>               |                                                                                                                      |
| Heads                      | 4 rotary heads, 1 flying erase head                                                                                  |
| Output                     | 1.0Vp-p/ 75Ω unbalanced                                                                                              |
| <b>Audio</b>               |                                                                                                                      |
| Head                       | 1 stationary head (Normal audio)                                                                                     |
| Input                      |                                                                                                                      |
| Output                     | -8dB, 47kΩ loaded                                                                                                    |
| <b>Weight</b>              | approx. 690g (without Battery pack)                                                                                  |
| <b>Dimensions</b>          | 88(W)x118(H)x242(D)                                                                                                  |

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.

## 1. COMPARISON CHART

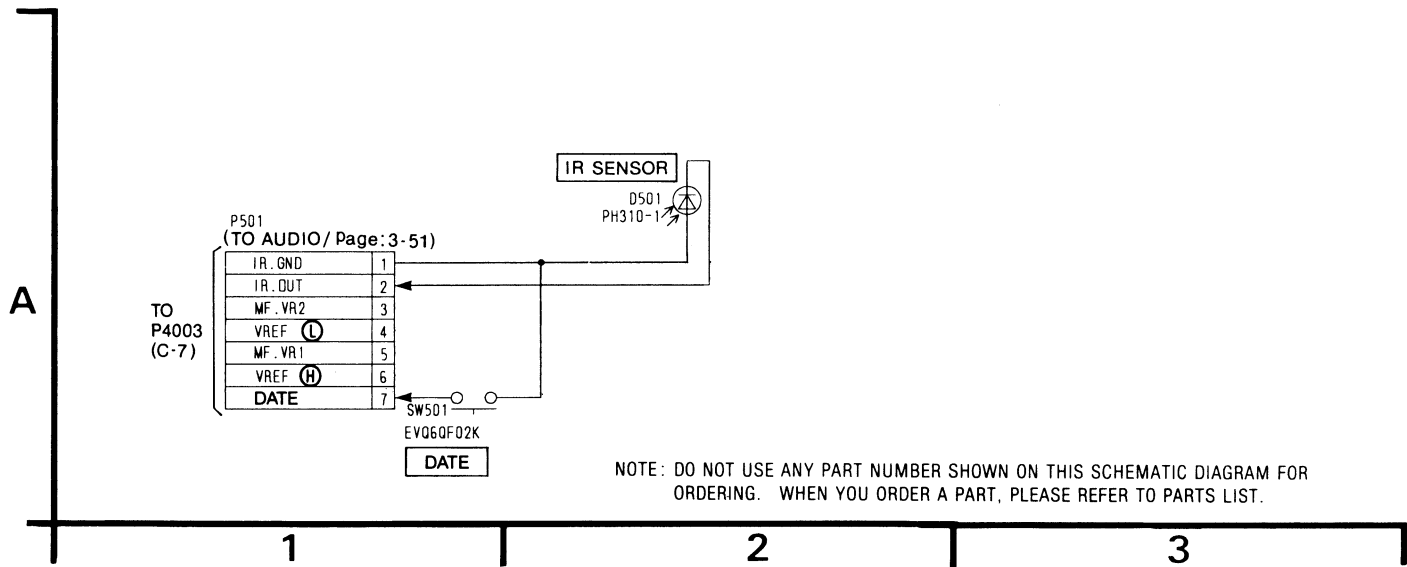
### 1. Comparison chart for M622/21

This chart describes all different mechanical parts from M621/21 to the new model M622/21 as shown below.

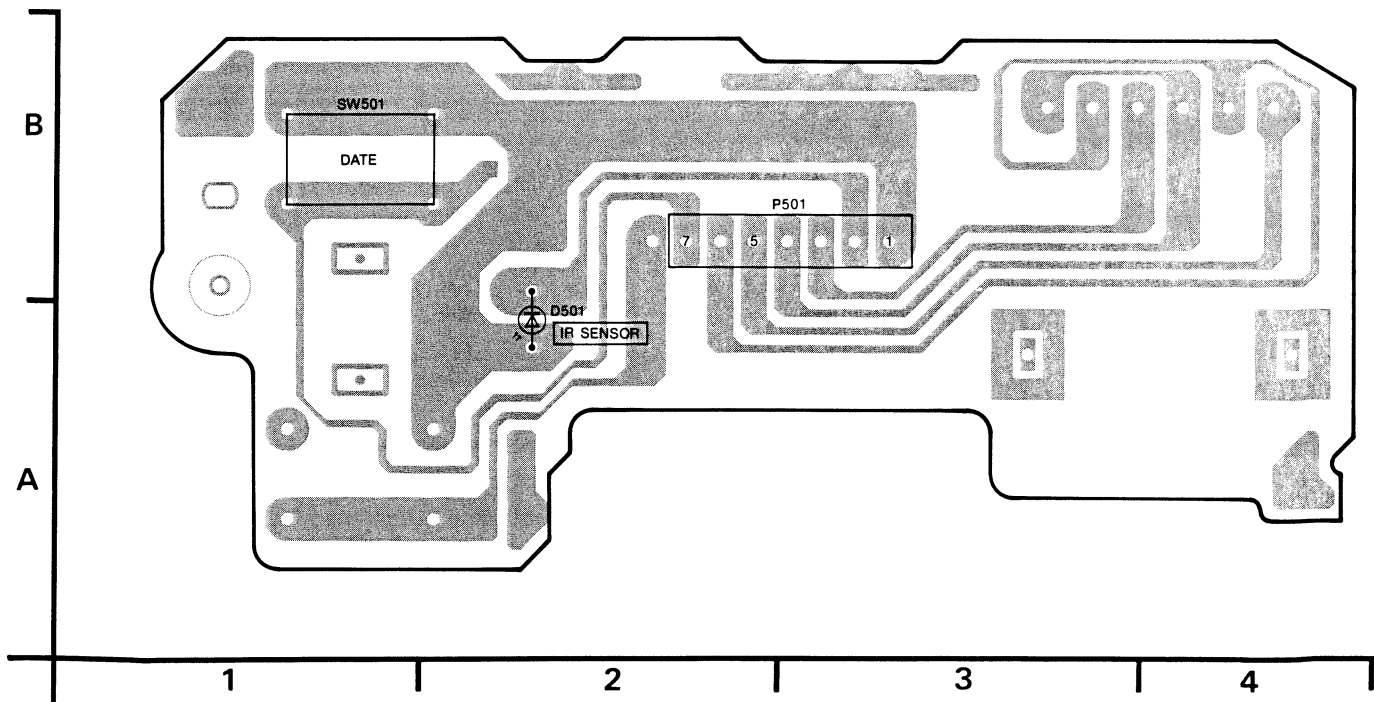
Comparison Chart of mechanical replacement parts. (A)...added, (C)...changed, (D)...deleted

| Ref. No. | Parts No.:M621 | Parts No.:M622 | Pcs/set | Part Name & Description                | Remarks |
|----------|----------------|----------------|---------|----------------------------------------|---------|
| 501(5)   | 4822 432 60857 | 4822 432 60882 | 1-----1 | Side case right (i)unit                | (C)     |
| 502(5)   | 4822 403 71109 | 4822 403 71109 | 1-----1 | Mode select lever unit                 | (C)     |
| 504(5)   | 4822 432 60858 | 4822 432 60881 | 1-----1 | Cassette cover (I) unit                | (C)     |
| 523(5)   | 4822 462 71998 | 4822 462 71998 | 1-----1 | Hood cap hing unit                     | (C)     |
| 530(5)   | 4822 432 60859 | 4822 432 60883 | 1-----1 | Front case (I) unit                    | (C)     |
| 534(5)   | 4822 413 31792 | -----          | 1-----0 | Focus knob                             | (D)     |
| 562(5)   | 4822 432 60866 | 4822 432 60879 | 1-----1 | Rear case                              | (C)     |
| 589(5)   | 4822 410 63146 | -----          | 1-----0 | Power save knob                        | (D)     |
| 593(5)   | 4822 432 60867 | 4822 432 60878 | 1-----1 | Camera operation unit                  | (C)     |
| 610(6)   | 4822 726 53761 | 4822 726 53902 | 1-----1 | DFU (English, German, French, Spanish) | (C)     |
| 610(6)   | 4822 726 53762 | 4822 726 53903 | 1-----1 | DFU (Italian, Dutch, Swedish)          | (C)     |
| 611(6)   | 4822 321 60713 | -----          | 1-----0 | A/V cord                               | (D)     |
| 612(6)   | 4822 263 50219 | -----          | 1-----0 | 21 pin adapter                         | (D)     |

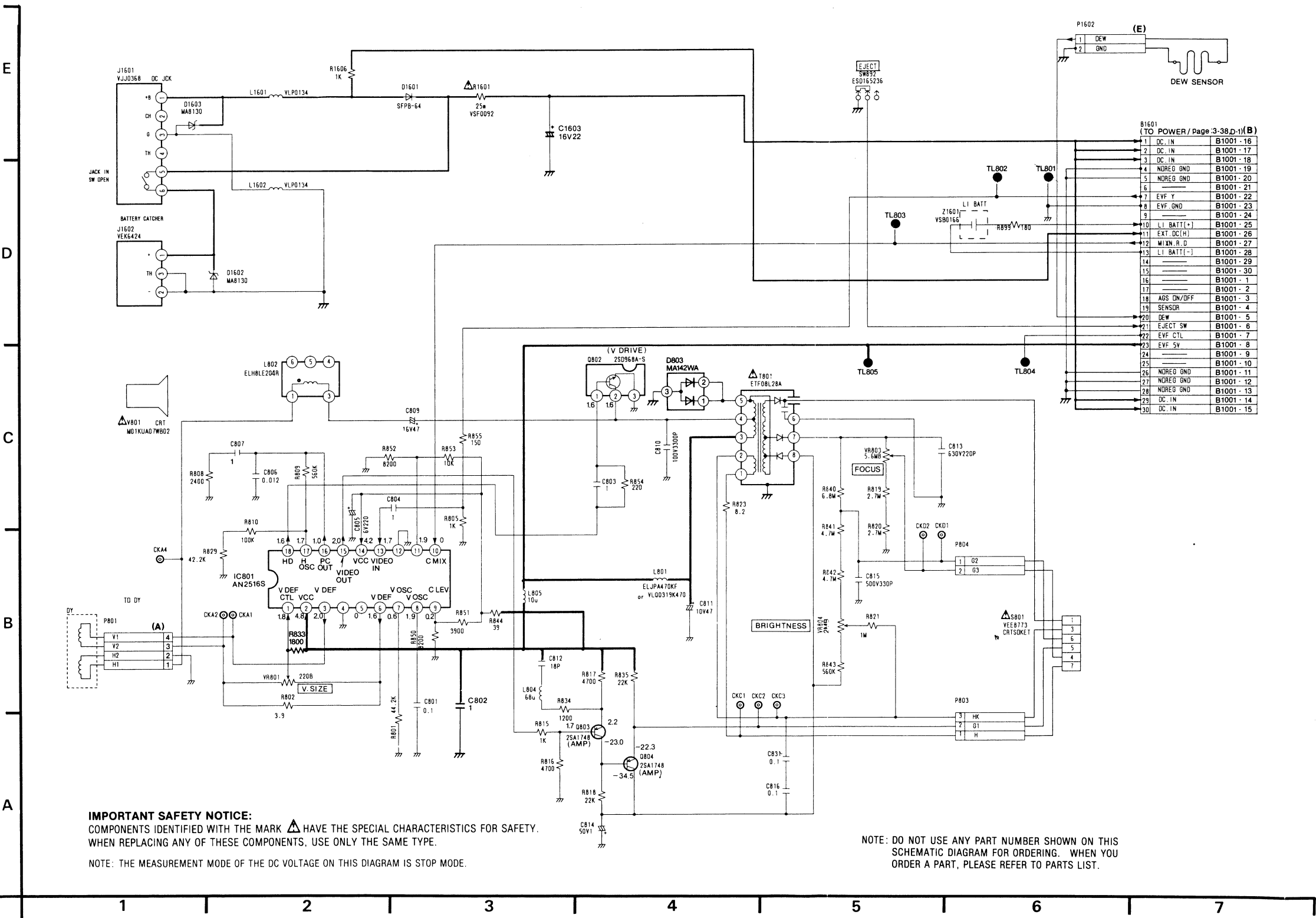
2. FRONT OPERATION SCHEMATIC DIAGRAM



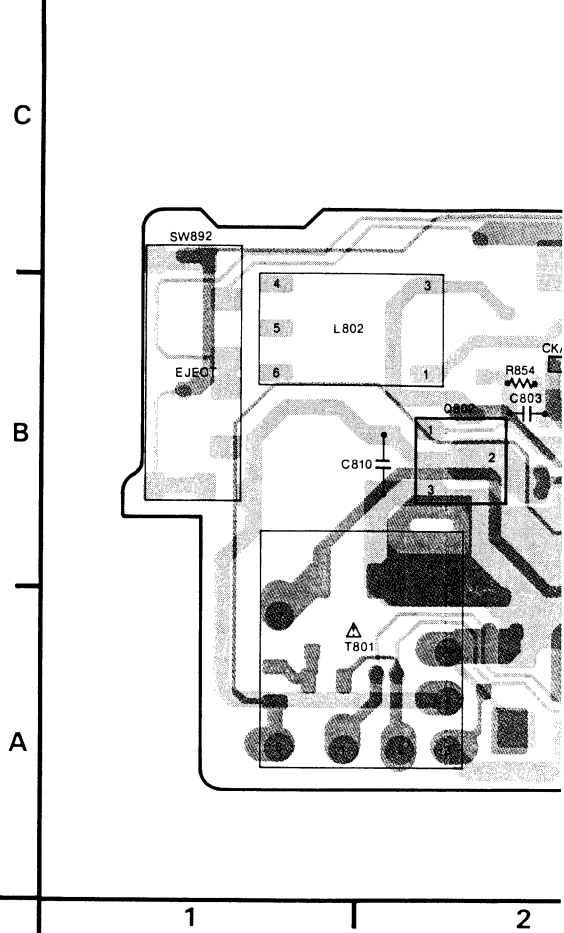
3. FRONT OPERATION C.B.A. (VEP00T97C)



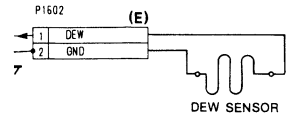
4. E.V.F. SCHEMATIC DIAGRAM



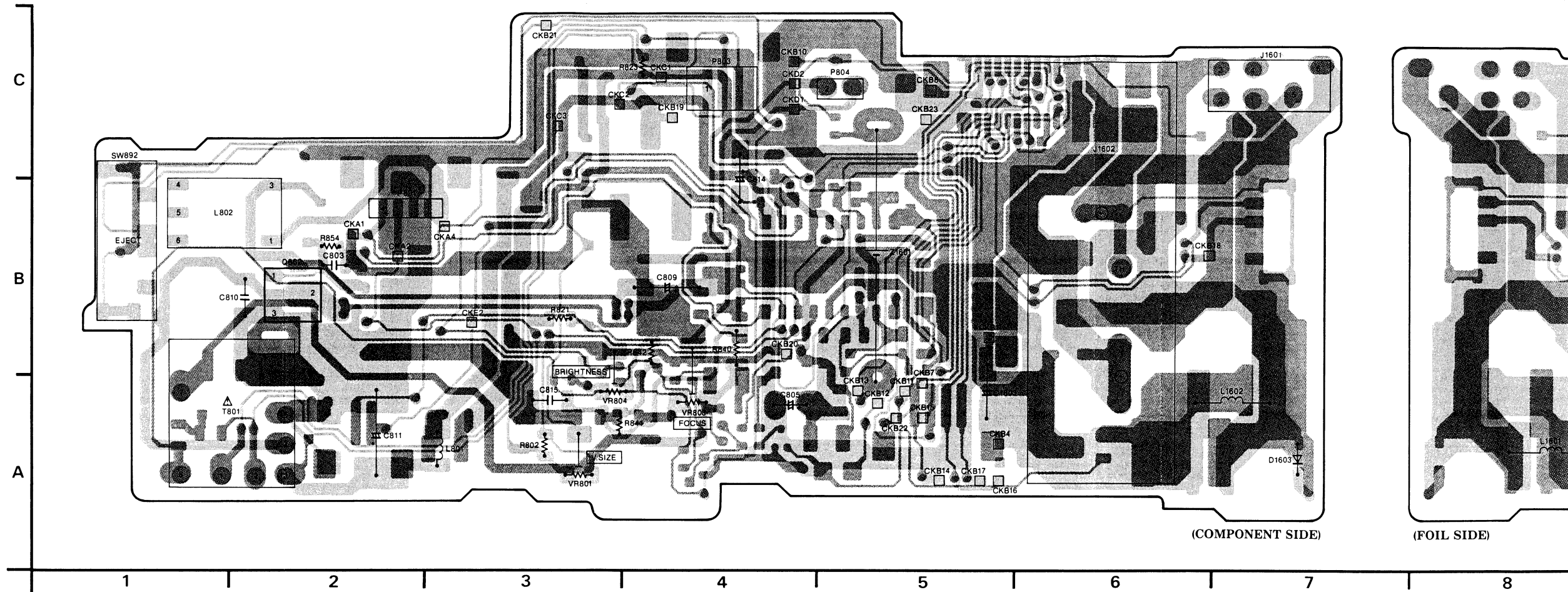
5. E.V.F. C.B.A. (VEP28076D)



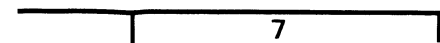
### 5. E.V.F. C.B.A. (VEP28076D)



| B1601 |            | TO POWER / Page 3-38, p-1 (B) |  |
|-------|------------|-------------------------------|--|
| 1     | DC_IN      | B1001 - 16                    |  |
| 2     | DC_IN      | B1001 - 17                    |  |
| 3     | DC_IN      | B1001 - 18                    |  |
| 4     | NOREG_GND  | B1001 - 19                    |  |
| 5     | NOREG_GND  | B1001 - 20                    |  |
| 6     | _____      | B1001 - 21                    |  |
| 7     | EVF_Y      | B1001 - 22                    |  |
| 8     | EVF_YND    | B1001 - 23                    |  |
| 9     | _____      | B1001 - 24                    |  |
| 10    | LI_BATT(+) | B1001 - 25                    |  |
| 11    | EXT_DC(H)  | B1001 - 26                    |  |
| 12    | MIN_A/D    | B1001 - 27                    |  |
| 13    | LI_BATT(-) | B1001 - 28                    |  |
| 14    | _____      | B1001 - 29                    |  |
| 15    | _____      | B1001 - 30                    |  |
| 16    | _____      | B1001 - 1                     |  |
| 17    | _____      | B1001 - 2                     |  |
| 18    | ASS_ON/OFF | B1001 - 3                     |  |
| 19    | SENSOR     | B1001 - 4                     |  |
| 20    | DEW        | B1001 - 5                     |  |
| 21    | EJECT_CSW  | B1001 - 6                     |  |
| 22    | EVF_SWL    | B1001 - 7                     |  |
| 23    | EVF_SW     | B1001 - 8                     |  |
| 24    | _____      | B1001 - 9                     |  |
| 25    | _____      | B1001 - 10                    |  |
| 26    | NOREG_GND  | B1001 - 11                    |  |
| 27    | NOREG_GND  | B1001 - 12                    |  |
| 28    | NOREG_GND  | B1001 - 13                    |  |
| 29    | DC_IN      | B1001 - 14                    |  |
| 30    | DC_IN      | B1001 - 15                    |  |

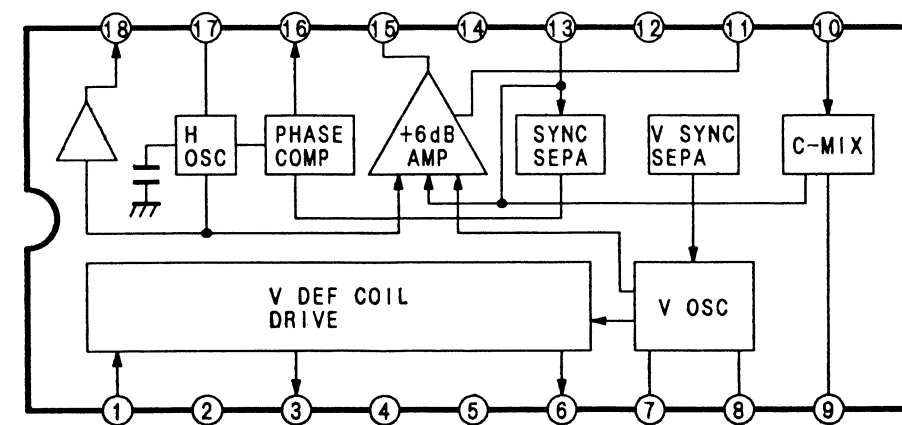


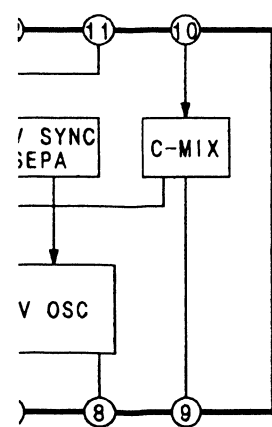
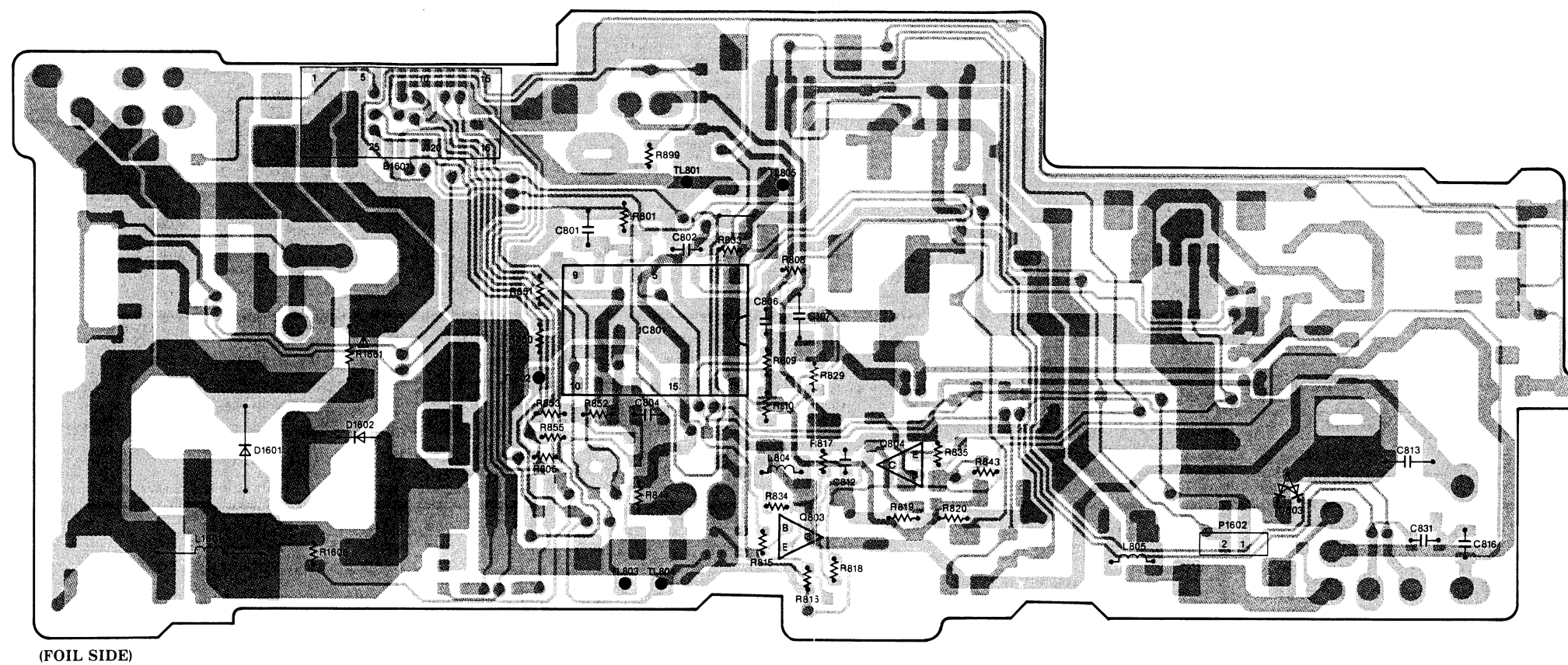
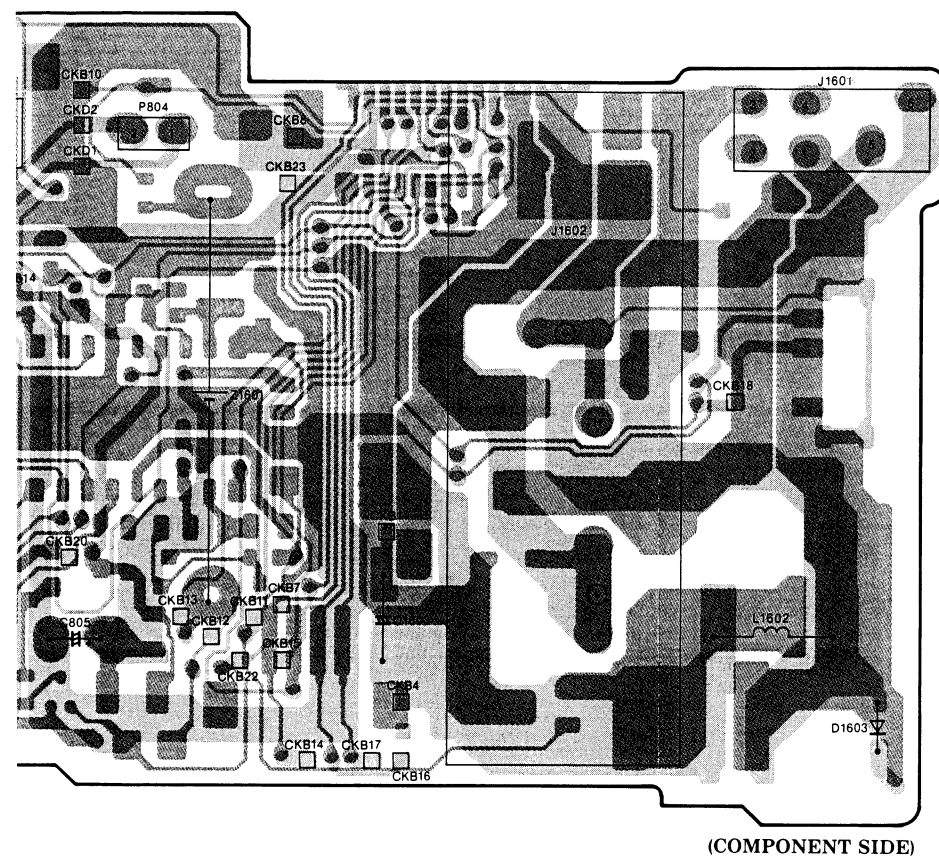
WN ON THIS  
WHEN YOU  
TS LIST.



## IC BLOCK

**IC801 (AN2516S)**





|                           |      |  |
|---------------------------|------|--|
| EVF C.B.A.                |      |  |
| <b>Integrated Circuit</b> |      |  |
| IC801                     | B-10 |  |
| <b>Transistor</b>         |      |  |
| Q802                      | B-2  |  |
| Q803                      | A-11 |  |
| Q804                      | A-11 |  |
| Q805                      | A-1  |  |
| <b>Test Point</b>         |      |  |
| TL801                     | C-10 |  |
| TL802                     | A-10 |  |
| TL803                     | A-10 |  |
| TL804                     | A-10 |  |
| TL805                     | C-11 |  |
| <b>Adjustment</b>         |      |  |
| VR801                     | A-3  |  |
| VR803                     | B-4  |  |
| VR804                     | B-3  |  |
| <b>Connector</b>          |      |  |
| B1601                     | C-9  |  |
| P801                      | C-2  |  |
| P803                      | C-4  |  |
| P804                      | C-5  |  |
| P1602                     | A-12 |  |

## Integrated Circuit

|       |      |
|-------|------|
| IC801 | B-10 |
|-------|------|

## Transistor

|      |      |
|------|------|
| Q802 | B-2  |
| Q803 | A-11 |
| Q804 | A-11 |
| Q805 | A-1  |

### Test Point

|       |      |
|-------|------|
| TL801 | C-10 |
| TL802 | A-10 |
| TL803 | A-10 |
| TL804 | A-10 |
| TL805 | C-11 |

## Adjustment

|       |     |
|-------|-----|
| VR801 | A-3 |
| VR803 | B-4 |
| VR804 | B-3 |

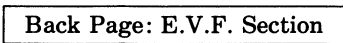
## Connector

|       |      |
|-------|------|
| B1601 | C-9  |
| P801  | C-2  |
| P803  | C-4  |
| P804  | C-5  |
| P1602 | A-12 |

### ADDRESS INFORMATION



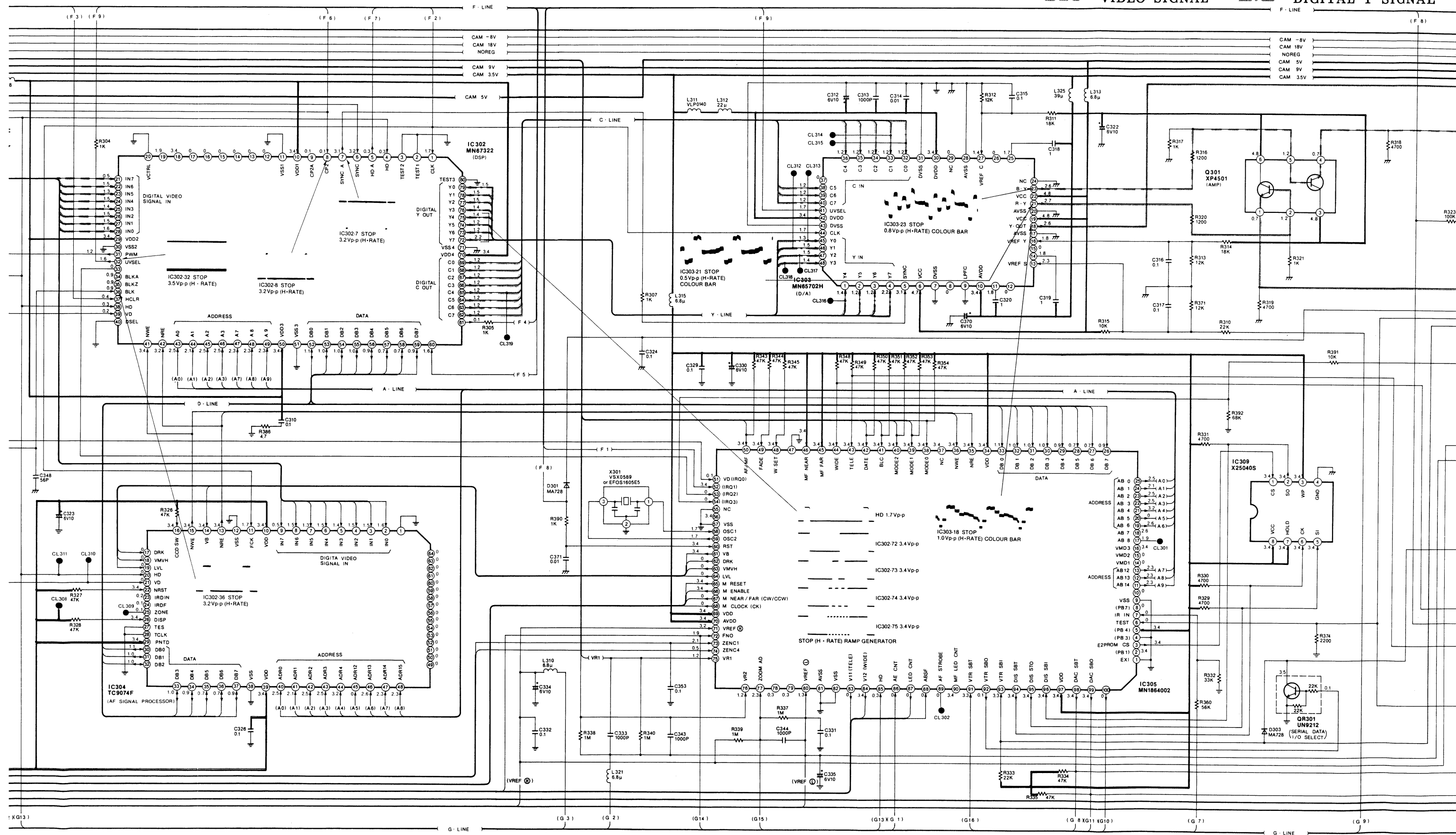
## PROCESS Section



# PROCESS Section

VIDEO SIGNAL

DIGITAL Y SIGNAL





VIDEO SIGNAL

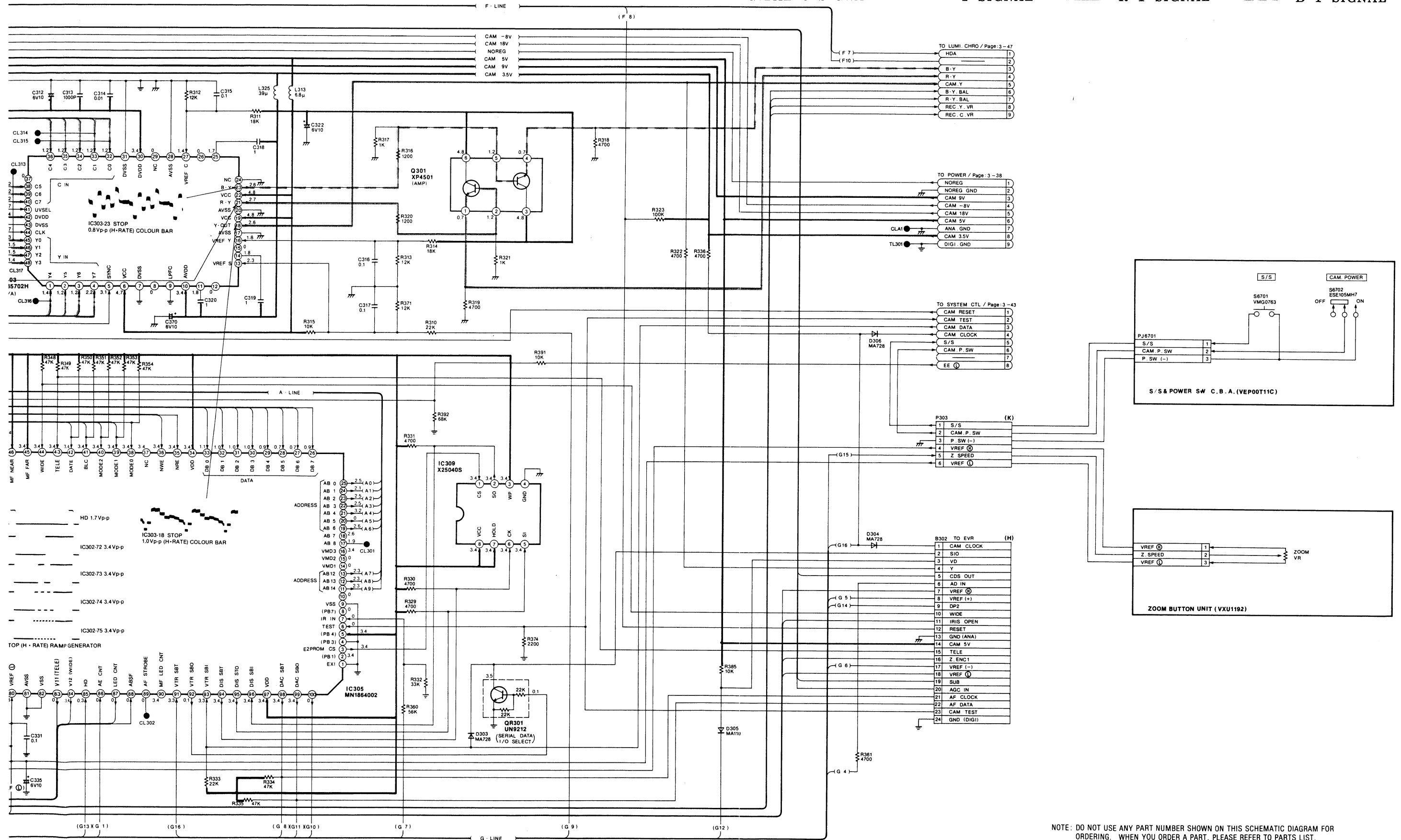
DIGITAL Y SIGNAL

DIGITAL C SIGNAL

Y SIGNAL

R-Y SIGNAL

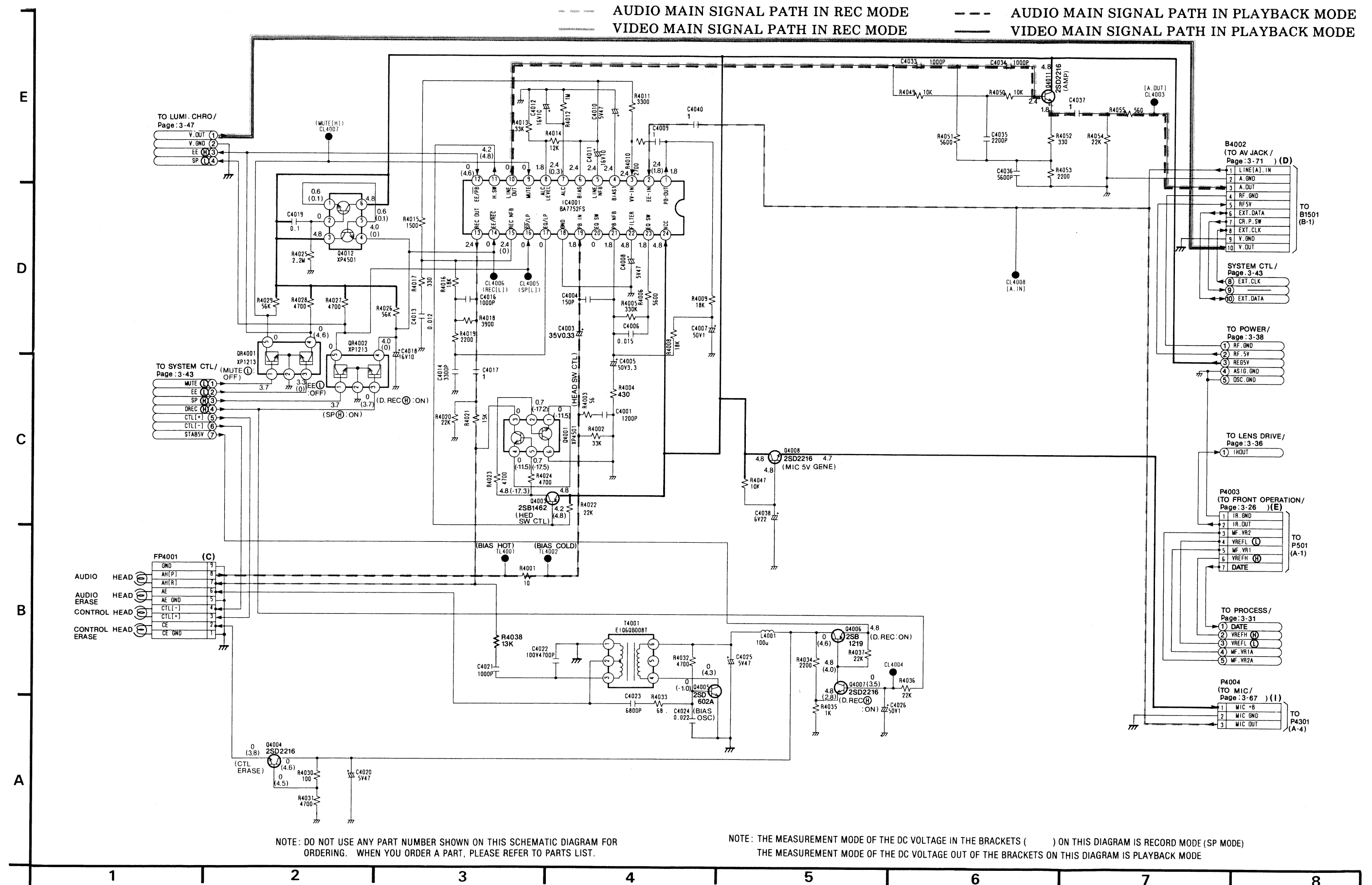
B-Y SIGNAL



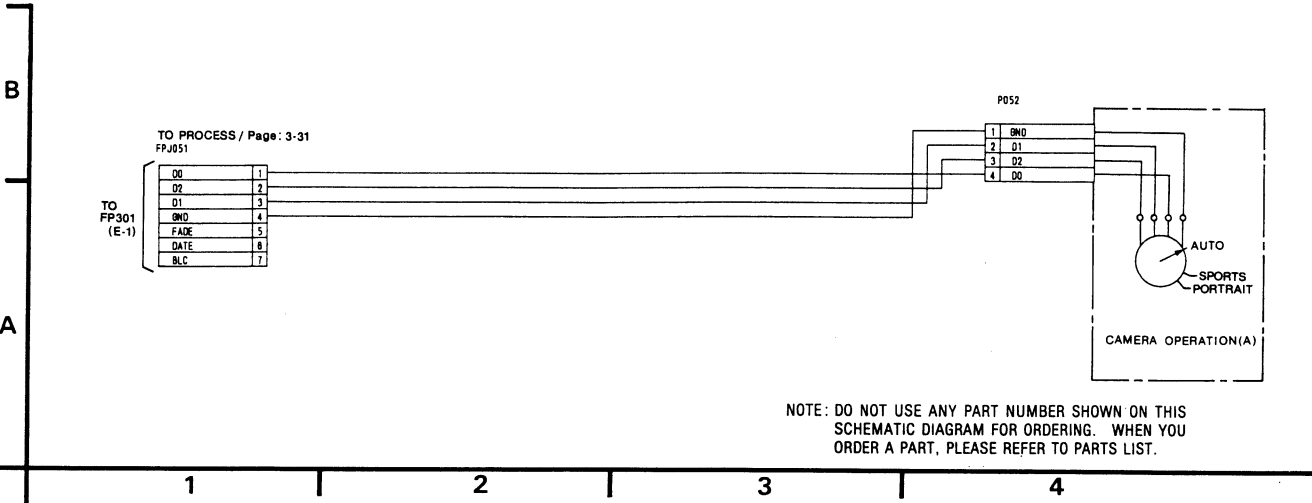
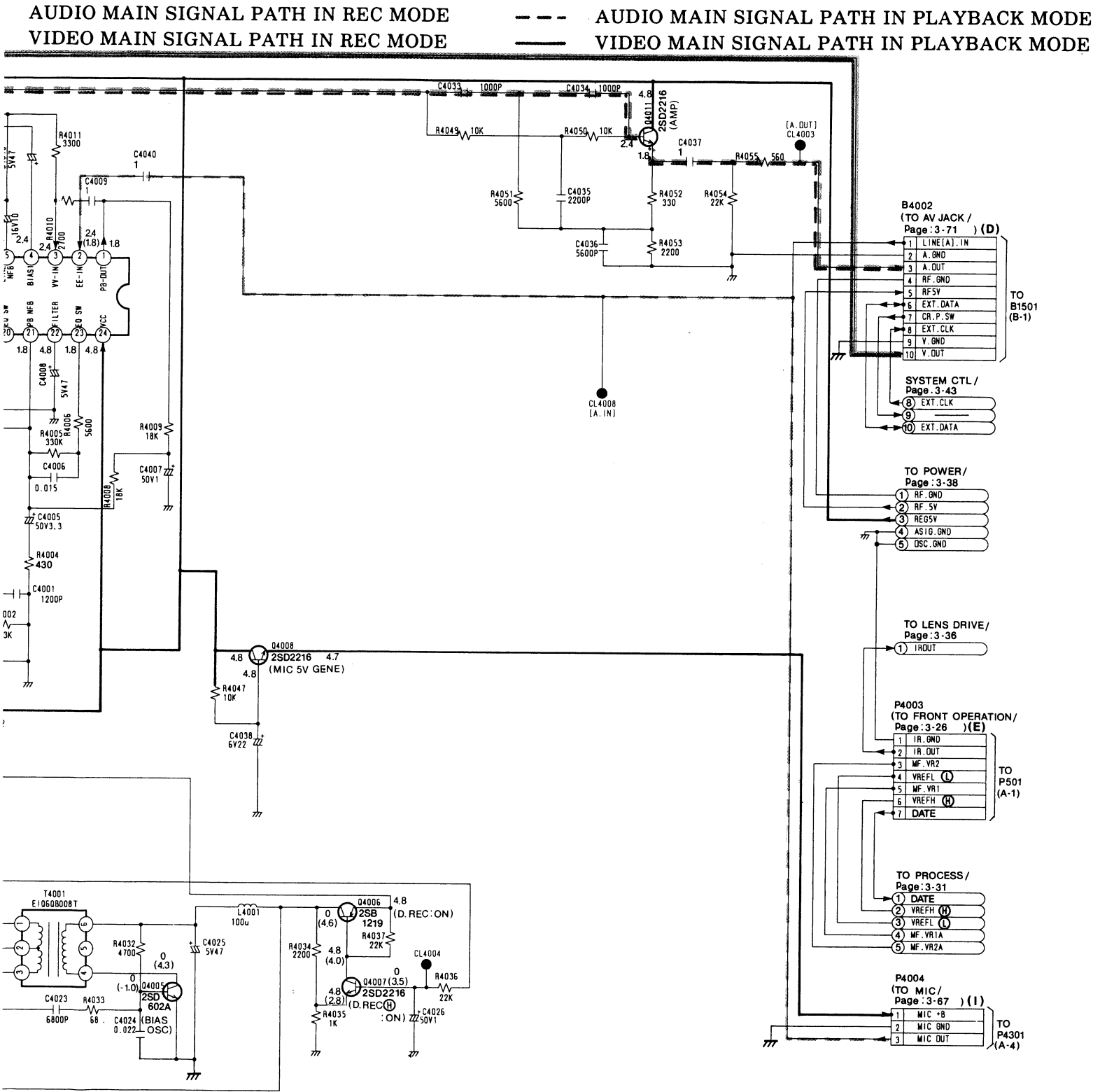
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

## 7. AUDIO SCHEMATIC DIAGRAM



8. CAMERA OPERATION UNIT  
SCHEMATIC DIAGRAM



NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE (SP MODE)  
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE

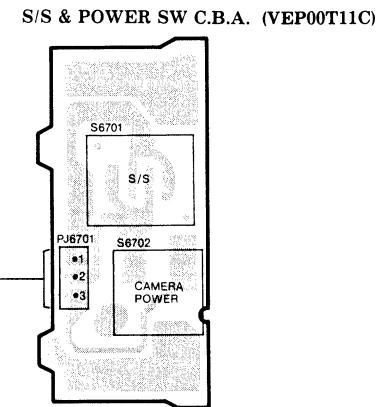
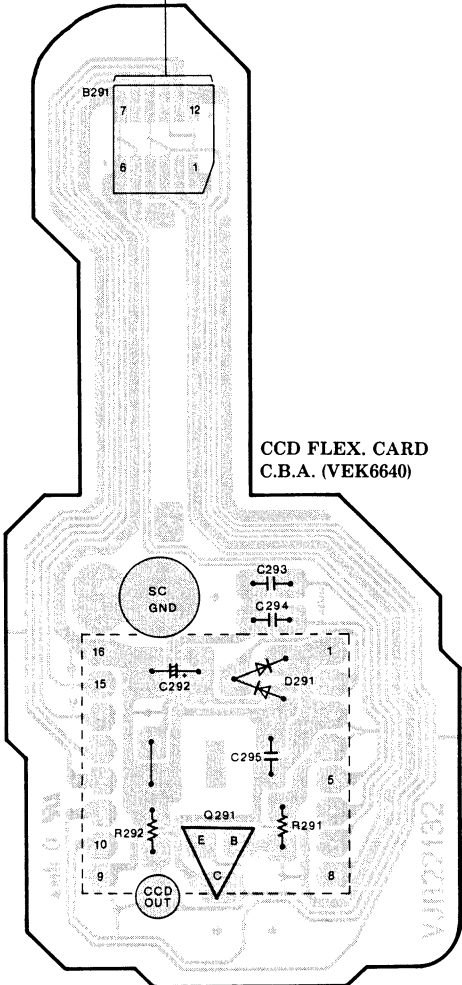
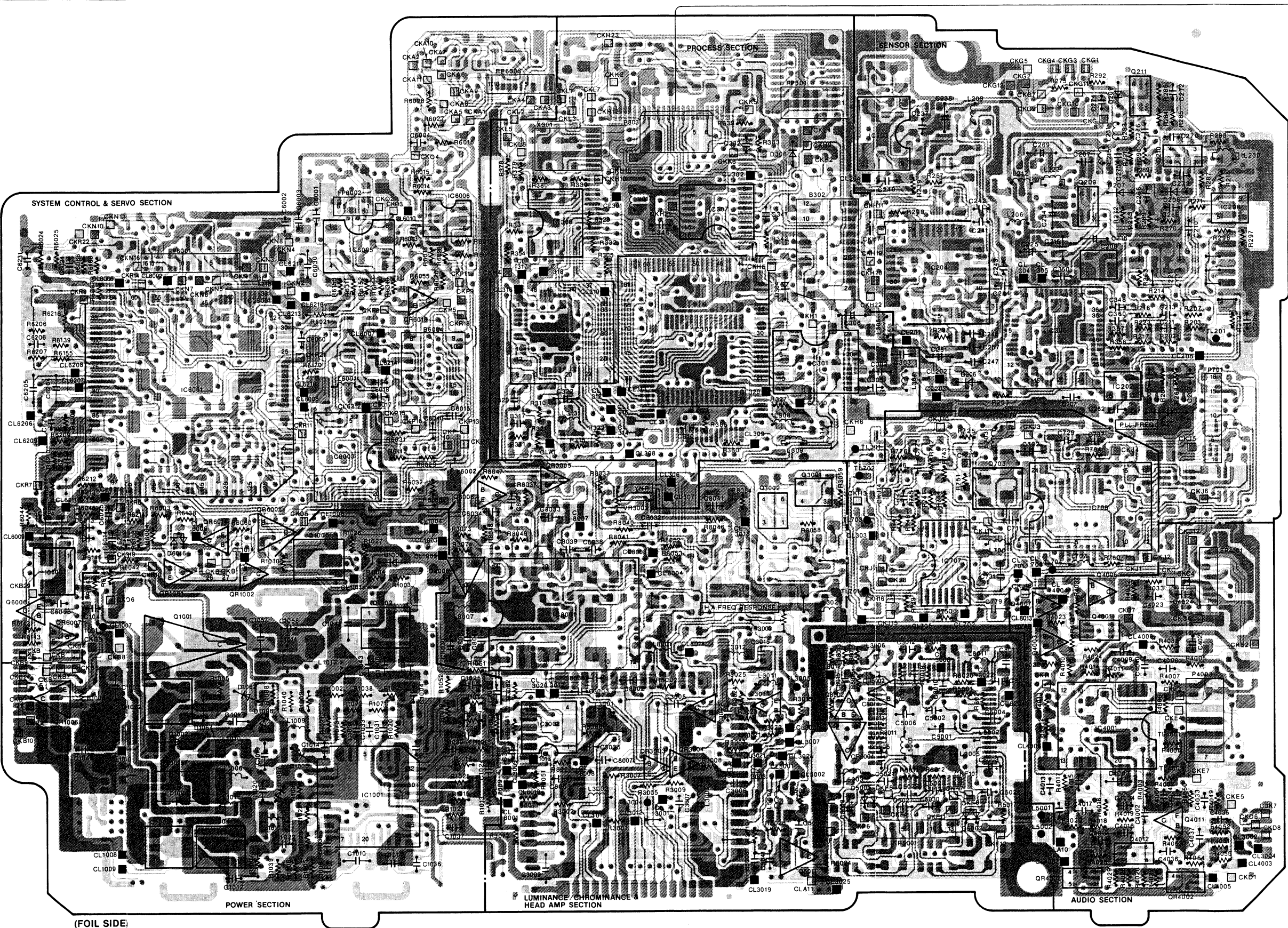


| MAIN C.B.A. |      |           |      |       |      |       |      |       |      |      |      |      |      |       |      |       |      |       |      |       |      |
|-------------|------|-----------|------|-------|------|-------|------|-------|------|------|------|------|------|-------|------|-------|------|-------|------|-------|------|
| Coil        |      | Capacitor |      | C347  | E-14 | C3015 | B-14 | C5042 | B-4  | R205 | F-1  | R328 | D-4  | R740  | C-3  | R3026 | B-4  | R5023 | B-14 | R6160 | D-7  |
| L203        | D-2  | C202      | D-17 | C348  | E-16 | C3022 | B-14 | C5043 | A-4  | R207 | E-17 | R329 | E-13 | R741  | D-15 | R3027 | B-4  | R5024 | A-15 | R6161 | D-8  |
| L204        | E-2  | C203      | D-17 | C350  | E-16 | C3023 | B-4  | C5044 | A-4  | R212 | E-17 | R330 | F-13 | R742  | D-15 | R3028 | C-5  | R5025 | A-14 | R6168 | E-10 |
| L206        | E-16 | C205      | E-17 | C351  | D-2  | C3024 | B-4  | C6001 | E-11 | R214 | E-17 | R331 | E-13 | R743  | D-15 | R3029 | C-4  | R6002 | C-7  | R6170 | D-11 |
| L207        | F-3  | C207      | D-16 | C352  | E-2  | C3027 | B-4  | C6002 | E-11 | R215 | E-2  | R332 | E-13 | R744  | D-15 | R3032 | C-5  | R6003 | C-10 | R6199 | D-7  |
| L209        | F-15 | C210      | E-17 | C353  | F-4  | C3028 | C-4  | C6003 | E-11 | R216 | E-17 | R333 | F-4  | R745  | D-15 | R3036 | C-5  | R6004 | C-10 | R6203 | D-6  |
| L210        | E-3  | C211      | E-17 | C360  | E-16 | C3030 | B-15 | C6004 | F-12 | R217 | E-17 | R334 | E-4  | R746  | D-15 | R3037 | D-13 | R6011 | F-6  | R6205 | E-8  |
| L211        | E-3  | C212      | F-1  | C370  | E-5  | C3031 | C-4  | C6005 | E-7  | R218 | F-17 | R335 | E-4  | R747  | C-15 | R3038 | C-6  | R6012 | F-6  | R6206 | E-9  |
| L212        | F-16 | C213      | E-17 | C371  | F-5  | C3032 | C-4  | C6006 | E-7  | R223 | E-17 | R336 | E-4  | R748  | C-15 | R3040 | C-5  | R6013 | E-12 | R6207 | D-9  |
| L215        | F-16 | C215      | E-16 | C701  | D-2  | C3033 | C-4  | C6007 | E-7  | R224 | E-2  | R337 | F-4  | R749  | C-15 | R3050 | C-5  | R6014 | F-12 | R6208 | D-10 |
| L220        | D-2  | C216      | E-16 | C702  | C-2  | C3034 | C-4  | C6008 | C-10 | R225 | F-2  | R338 | F-4  | R750  | C-15 | R3058 | C-14 | R6015 | F-12 | R6209 | D-10 |
| L221        | E-17 | C216      | E-16 | C703  | D-2  | C3035 | B-13 | C6011 | E-8  | R233 | F-3  | R339 | F-14 | R751  | D-15 | R3059 | D-15 | R6016 | F-12 | R6210 | D-10 |
| L222        | F-16 | C225      | E-16 | C710  | C-1  | C3037 | B-13 | C6012 | E-7  | R236 | F-3  | R340 | F-4  | R752  | D-1  | R3060 | D-4  | R6017 | E-12 | R6211 | D-10 |
| L230        | F-17 | C233      | E-2  | C711  | C-16 | C3040 | C-6  | C6013 | E-8  | R237 | F-3  | R342 | E-14 | R753  | D-2  | R3062 | C-4  | R6018 | E-12 | R6212 | D-10 |
| L231        | F-16 | C234      | E-16 | C716  | D-2  | C3041 | C-6  | C6014 | C-10 | R238 | F-3  | R343 | F-6  | R754  | D-1  | R3063 | D-4  | R6019 | E-12 | R6213 | D-10 |
| L301        | D-3  | C236      | F-3  | C719  | C-3  | C3042 | C-5  | C6015 | D-12 | R239 | F-15 | R344 | F-5  | R755  | D-2  | R3064 | C-4  | R6020 | E-12 | R6214 | C-10 |
| L302        | D-3  | C237      | F-15 | C720  | C-3  | C3043 | C-5  | C6017 | D-12 | R241 | F-3  | R345 | F-5  | R756  | D-1  | R3071 | B-13 | R6021 | E-11 | R6216 | E-10 |
| L303        | D-3  | C238      | F-15 | C721  | C-3  | C4001 | B-17 | C6018 | D-12 | R242 | E-3  | R348 | F-5  | R757  | D-2  | R3072 | A-13 | R6022 | F-7  | R6230 | E-8  |
| L304        | D-15 | C239      | F-3  | C722  | C-3  | C4002 | A-17 | C6022 | D-6  | R243 | F-3  | R349 | F-5  | R758  | D-2  | R3073 | C-12 | R6024 | E-10 | R6231 | C-9  |
| L305        | E-15 | C240      | F-15 | C724  | D-15 | C4003 | B-16 | C6023 | E-6  | R244 | F-3  | R350 | F-6  | R759  | D-1  | R3074 | C-12 | R6025 | E-10 | R6300 | E-6  |
| L306        | D-3  | C241      | E-16 | C725  | D-15 | C4004 | A-16 | C6024 | E-10 | R245 | E-3  | R351 | F-5  | R760  | C-16 | R3081 | B-13 | R6026 | E-12 | R6301 | E-6  |
| L307        | E-3  | C242      | E-16 | C729  | A-1  | C4005 | C-10 | C6025 | F-10 | R246 | E-3  | R352 | F-5  | R761  | C-3  | R3082 | B-13 | R6027 | F-12 | R6302 | E-7  |
| L308        | D-14 | C243      | E-16 | C730  | D-2  | C4006 | B-17 | C6027 | D-7  | R247 | E-3  | R353 | F-6  | R763  | C-3  | R3086 | B-13 | R6028 | F-12 | R6303 | E-7  |
| L309        | D-14 | C244      | E-16 | C731  | C-16 | C4007 | B-1  | C6030 | E-11 | R249 | E-3  | R354 | E-12 | R764  | D-16 | R4001 | B-17 | R6029 | D-12 | R6305 | F-7  |
| L310        | D-3  | C245      | F-3  | C732  | D-16 | C4008 | A-5  | C6031 | D-7  | R250 | E-3  | R355 | D-2  | R765  | B-1  | R4002 | B-17 | R6031 | D-12 | R6309 | D-7  |
| L311        | E-6  | C246      | E-16 | C737  | D-16 | C4009 | B-16 | C6038 | E-7  | R251 | E-3  | R356 | E-2  | R767  | B-2  | R4003 | B-17 | R6032 | D-12 | R6310 | E-12 |
| L312        | E-6  | C247      | D-16 | C738  | B-1  | C4010 | A-2  | C6040 | D-12 | R252 | E-3  | R357 | E-16 | R1001 | B-12 | R4004 | A-1  | R6033 | D-12 | R6311 | E-11 |
| L313        | D-13 | C249      | E-3  | C739  | B-2  | C4011 | B-2  | C6060 | E-11 | R253 | D-16 | R358 | E-16 | R1002 | B-11 | R4005 | B-17 | R6034 | E-6  | R8001 | C-5  |
| L314        | D-15 | C250      | E-3  | C779  | C-16 | C4012 | A-2  | C6100 | D-7  | R255 | E-3  | R359 | D-2  | R1003 | C-12 | R4006 | B-17 | R6035 | D-8  | R8002 | B-14 |
| L315        | E-4  | C251      | D-15 | C1001 | B-10 | C4013 | B-16 | C6201 | E-8  | R256 | F-3  | R360 | D-14 | R1004 | C-12 | R4007 | B-17 | R6039 | C-8  | R8003 | C-5  |
| L316        | F-4  | C252      | E-3  | C1002 | B-7  | C4014 | B-16 | C6203 | D-8  | R257 | F-15 | R361 | D-4  | R1005 | A-11 | R4008 | B-2  | R6040 | F-7  | R8004 | C-5  |
| L317        | E-13 | C253      | E-3  | C1003 | B-7  | C4015 | B-16 | C6204 | D-10 | R258 | E-3  | R371 | D-13 | R1006 | A-11 | R4009 | B-2  | R6041 | F-7  | R8005 | C-5  |
| L318        | D-3  | C254      | E-3  | C1004 | B-12 | C4016 | A-16 | C6205 | D-9  | R260 | E-3  | R374 | F-5  | R1007 | A-11 | R4010 | B-16 | R6042 | C-10 | R8007 | B-14 |
| L319        | F-4  | C255      | E-3  | C1005 | B-12 | C4017 | A-16 | C6206 | E-9  | R263 | E-17 | R375 | F-6  | R1008 | B-11 | R4011 | B-16 | R6043 | C-8  | R8010 | B-4  |
| L321        | D-3  | C256      | E-3  | C1006 | B-12 | C4018 | A-2  | C6207 | D-8  | R264 | D-2  | R376 | F-5  | R1009 | B-11 | R4012 | B-16 | R6044 | C-9  | R8011 | B-15 |
| L325        | E-5  | C257      | E-16 | C1007 | B-8  | C4019 | A-16 | C6208 | D-8  | R265 | F-2  | R377 | F-6  | R1010 | C-11 | R4013 | B-16 | R6045 | C-10 | R8012 | B-15 |
| L701        | D-2  | C258      | E-3  | C1008 | A-7  | C4020 | C-1  | C6209 | D-8  | R266 | F-2  | R378 | F-12 | R1012 | B-12 | R4014 | B-16 | R6048 | E-8  | R8013 | B-15 |
| L703        | D-16 | C262      | D-16 | C1009 | A-11 | C4021 | C-17 | C6210 | C-10 | R268 | D-17 | R379 | F-13 | R1013 | B-12 | R4015 | B-2  | R6049 | E-8  | R8014 | B-15 |
| L706        | C-16 | C265      | E-17 | C1010 | A-11 | C4022 | C-1  | C6211 | D-10 | R269 | E-17 | R380 | F-13 | R1014 | B-12 | R4016 | A-16 | R6050 | F-7  | R8015 | B-15 |
| L707        | C-16 | C266      | E-17 | C1011 | A-12 | C4023 | C-17 | C6213 | C-8  | R270 | E-17 | R382 | F-4  | R1015 | B-12 | R4017 | B-16 | R6051 | E-8  | R8016 | B-15 |
| L1001       | A-8  | C267      | F-16 | C1012 | A-11 | C4024 | C-17 | C6214 | D-10 | R271 | E-17 | R383 | F-14 | R1016 | B-12 | R4018 | A-16 | R6052 | E-8  | R8017 | B-3  |
| L1002       | B-7  | C269      | F-16 | C1013 | B-7  | C4025 | C-2  | C6221 | D-8  | R272 | E-16 | R385 | E-4  | R1017 | B-12 | R4019 | A-16 | R6053 | E-8  | R8018 | B-4  |
| L1003       | C-7  | C270      | F-17 | C1014 | B-11 | C4026 | C-2  | C6230 | D-8  | R273 | E-17 | R386 | D-14 | R1018 | B-12 | R4020 | A-16 | R6054 | E-8  | R8020 | B-15 |
| L1006       | B-11 | C271      | E-2  | C1015 | C-7  | C4033 | B-17 | C6231 | E-9  | R274 | F-2  | R390 | F-5  | R1019 | B-12 | R4021 | C-16 | R6055 | E-12 | R8021 | B-16 |
| L1007       | A-8  | C272      | F-17 | C1017 | B-11 | C4034 | F-17 | C8001 | C-5  | R275 | F-16 | R391 | F-5  | R1020 | B-12 | R4022 | B-16 | R6056 | F-7  | R8026 | B-6  |
| L1008       | A-7  | C273      | F-17 | C1019 | B-11 | C4035 | A-17 | C8002 | C-5  | R284 | F-17 | R392 | F-5  | R1021 | B-11 | R4023 | C-16 | R6060 | C-11 | R8027 | B-6  |
| L1009       | B-11 | C274      | F-16 | C1020 | B-11 | C4036 | A-17 | C8003 | C-5  | R285 | F-17 | R701 | D-2  | R1022 | A-11 | R4024 | C-16 | R6061 | E-8  | R8028 | B-6  |
| L1010       | B-11 | C275      | F-16 | C1022 | A-11 | C4037 | F-17 | C8004 | C-5  | R286 | F-17 | R702 | C-2  | R1023 | A-11 | R4025 | A-16 | R6063 | E-10 | R8029 | B-6  |
| L1011       | A-11 | C276      | F-17 | C1024 | B-12 | C4038 | B-2  | C8005 | C-5  | R287 | F-17 | R703 | C-1  | R1024 | A-12 | R4026 | A-17 | R6066 | E-10 | R8030 | C-6  |
| L1012       | B-11 | C301      | D-3  | C1025 | B-12 | C4040 | B-17 | C8007 | B-13 | R288 | F-17 | R704 | C-2  | R1025 | B-12 | R4027 | A-17 | R6070 | D-6  | R8031 | C-6  |
| L1014       | B-11 | C302      | D-15 | C1026 | B-6  | C5001 | B-15 | C8008 | B-13 | R289 | F-17 | R705 | C-2  | R1026 | C-11 | R4028 | A-16 | R6071 | D-7  | R8032 | D-5  |
| L1015       | B-11 | C303      | D-15 | C1027 | B-6  | C5002 | B-15 | C8010 | B-15 | R290 | F-17 | R708 | C-1  | R1027 | C-12 | R4029 | A-16 | R6073 | D-6  | R8033 | C-6  |
| L1062       | C-8  | C304      | D-3  | C1028 | B-6  | C5003 | B-16 | C8011 | B-16 | R291 | F-16 | R709 | C-1  | R1033 | B-10 | R4030 | C-1  | R6074 | D-7  | R8034 | C-5  |
| L3001       | B-13 | C305      | D-15 | C1029 | B-12 | C5004 | B-16 | C8012 | B-16 | R292 | F-16 | R710 | C-2  | R1035 | B-11 | R4031 | C-1  | R6075 | D-7  | R8037 | D-13 |
| L3002       | B-13 | C306      | E-15 | C1030 | B-12 | C5005 | B-15 | C8013 | B-15 | R293 | F-16 | R711 | D-2  | R1038 | B-12 | R4032 | C-17 | R6076 | E-6  | R8040 | C-13 |
| L3003       | B-14 | C307      | E-4  | C1031 | B-12 | C5006 | B-15 | C8014 | B-15 | R295 | D-2  | R712 | C-2  | R1039 | A-11 | R4033 | C-17 | R6078 | D-7  | R8041 | C-13 |
| L3005       | B-15 | C308      | E-4  | C1032 | B-12 | C5007 | B-15 | C8015 | B-15 | R296 | E-17 | R713 | D-2  | R1040 | B-11 | R4034 | C-2  | R6080 | D-8  | R8046 | C-14 |
| L3006       | B-15 | C310      | D-14 | C1033 | B-12 | C5008 | B-15 | C8020 | C-6  | R297 | E-15 | R714 | D-2  | R1051 | B-12 | R4035 | B-2  | R6090 | D-7  | R8047 | D-12 |
| L3011       | B-14 | C312      | E-5  | C1034 | B-11 | C5009 | B-4  | C8021 | C-6  | R298 | E-15 | R715 | D-2  | R1052 | B-12 | R4036 | C-2  | R6091 | D-7  | R8048 | C-12 |
| L3012       | C-14 | C313      | E-5  | C1035 | A-11 | C5011 | B-3  | C8022 | C-6  | R299 | E-15 | R716 | C-3  | R1062 | C-8  | R4037 | C-16 | R6108 | C-10 | R8049 | C-13 |
| L3013       | C-4  | C314      | E-6  | C1036 | A-12 | C5013 | B-3  | C8023 | C-6  | R301 | D-3  | R717 | D-3  | R1063 | C-10 | R4038 | C-17 | R6111 | D-8  | R8050 | B-13 |
| L3014       | B-4  | C315      | D-5  | C1037 | A-12 | C5014 | B-3  | C8024 | C-6  | R302 | E-4  | R718 | C-3  | R1065 | B-11 | R4047 | B-2  | R6112 | D-8  | R8051 | B-13 |
| L3015       | C-6  | C316      | D-5  | C1040 | B-10 | C5021 | B-15 | C8025 | C-6  | R303 | E-4  | R720 | C-3  | R1071 | B-12 | R4049 | B-17 | R6113 | D-12 | R8052 | C-14 |
| L3016       | C-5  | C317      | D-13 | C1041 | C-10 | C5022 | B-4  | C8026 | D-5  | R304 | E-5  | R721 | C-3  | R1072 | B-11 | R4050 | B-17 | R6130 | E-7  | R8053 | C-14 |
| L3021       | C-15 | C318      | D-5  | C1042 | C-11 | C5023 | B-3  | C8027 | C-5  | R305 | E-13 | R722 | C-3  | R1073 | B-11 | R4051 | A-17 | R6131 | C-8  | R8054 | C-14 |
| L3022       | C-4  | C319      | D-5  | C1043 | B-12 | C5024 | A-3  | C8030 | C-12 | R307 | E-6  | R723 | C-2  | R3001 | A-13 | R4052 | A-17 | R6134 | E-6  |       |      |
| L4001       | B-1  | C320      | D-13 | C1051 |      |       |      |       |      |      |      |      |      |       |      |       |      |       |      |       |      |



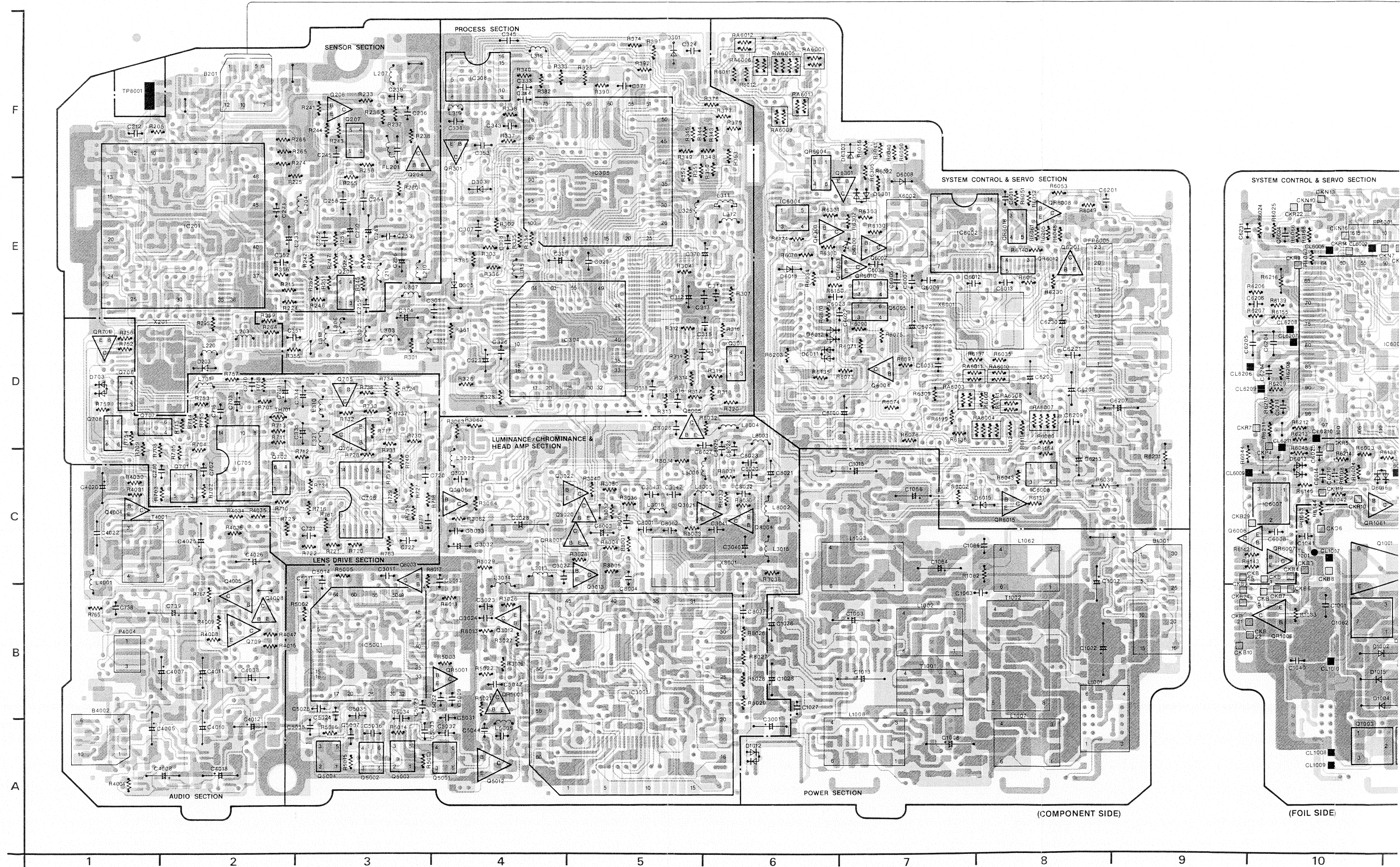




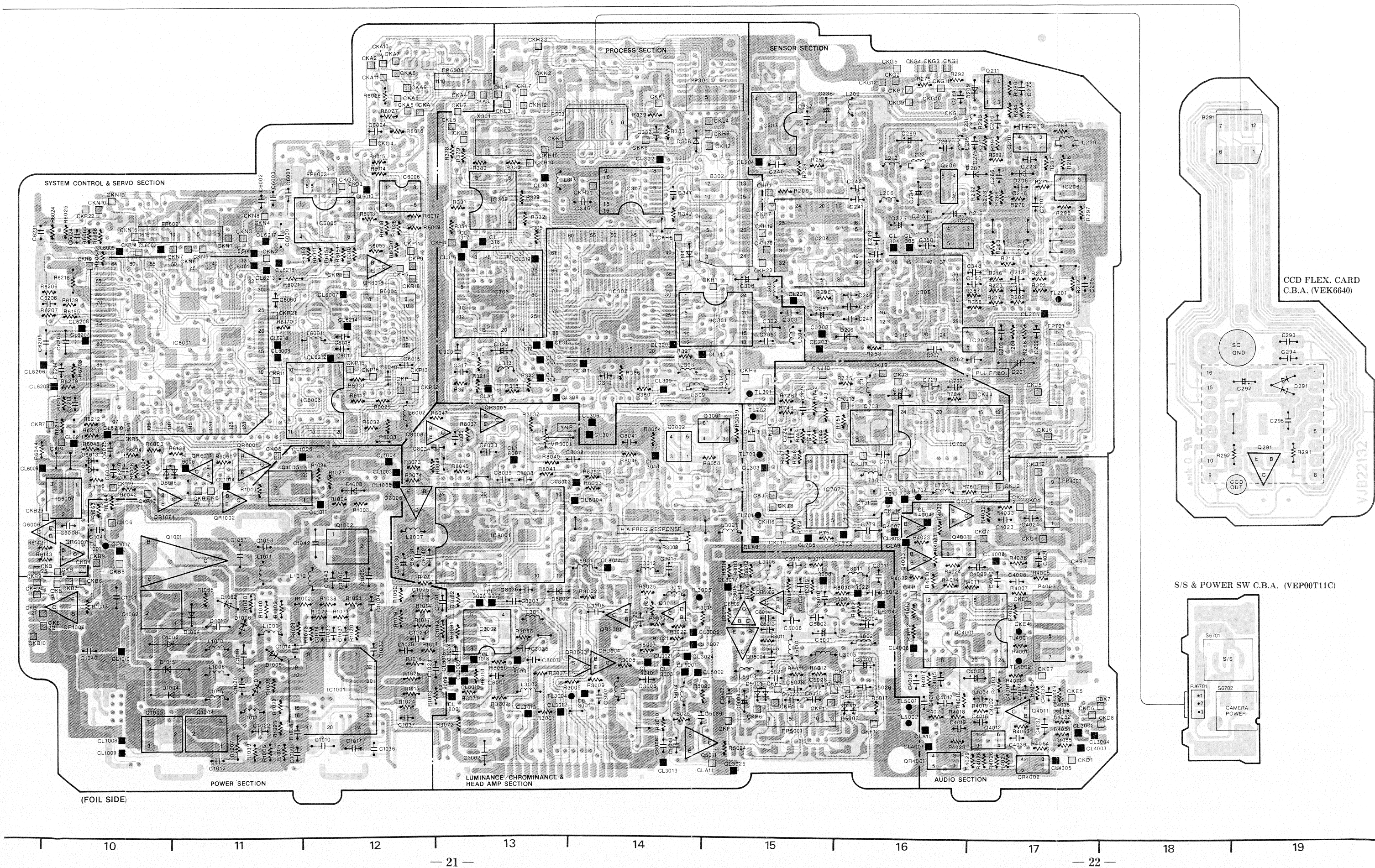




# 9. MAIN [SENSOR, PROCESS, LENS DRIVE, POWER, SYSTEM CONTROL & SERVO, LUMINANCE/CHROMINANCE & HEAD AMP, AUDIO Section] C.B.A. (VE









REPLACEMENT PARTSLIST M622

MECHANISM SECTION

|        |                |                       |
|--------|----------------|-----------------------|
| 1(1)   | 4822 466 82928 | REEL BASE (S)         |
| 2(1)   | 4822 522 33259 | BRAKE GEAR (A)        |
| 3(1)   | 4822 522 33261 | BRAKE GEAR (B)        |
| 4(1)   | 4822 522 33262 | BRAKE GEAR (C)        |
| 5(1)   | 4822 361 21533 | LOADING MOTOR (1) U.  |
| 6(1)   | 4822 256 91926 | MOTOR HOLDER U.       |
| 7(1)   | 4822 214 33857 | RT CONNECTOR U.       |
| 8(1)   | 4822 403 70614 | T-RING SLIDER         |
| 9(1)   | 4822 403 70769 | TEN-REG.SPRING HOOK   |
| 10(1)  | 4822 403 70615 | PENDULUM ARM HOLDER   |
| 11(1)  | 4822 492 52316 | T3 ARM SPRING         |
| 12(1)  | 4822 492 52317 | AC HEAD SPRING        |
| 13(1)  | 4822 691 20754 | S-BOAT GUIDE          |
| 14(1)  | 4822 403 70616 | T-BOAT GUIDE          |
| 15(1)  | 4822 522 33422 | MODE SWITCH U.        |
| 16(1)  | 4822 417 50285 | LOCK BASE U.          |
| 17(1)  | 4822 532 12204 | LOADING RING UNIT     |
| 18(1)  | 4822 532 12172 | RING GUIDE            |
| 19(1)  | 4822 532 12173 | T-RING UNIT           |
| 20(1)  | 4822 532 12174 | S-RING UNIT           |
| 21(1)  | 4822 130 83052 | LED UNIT              |
| 22(1)  | 4822 462 30556 | T-RAIL UNIT           |
| 23(1)  | 4822 403 70632 | T-BOAT UNIT           |
| 24(1)  | 4822 403 70626 | T4 POST UNIT          |
| 25(1)  | 4822 403 71028 | T-REEL SENSOR UNIT    |
| 26(1)  | 4822 403 70628 | S-RAIL U.             |
| 27(1)  | 4822 403 70776 | S-BOAT U.             |
| 28(1)  | 4822 249 10505 | AC HEAD U.            |
| 29(1)  | 4822 403 70633 | EJECT LEVER U.        |
| 30(1)  | 4822 403 70634 | SWINGARM U.           |
| 31(1)  | 4822 403 70635 | T3 ARM U.             |
| 32(1)  | 4822 403 71029 | PINCH ARM U.          |
| 33(1)  | 4822 403 70637 | PINCH DRIVE ARM U.    |
| 34(1)  | 4822 492 33357 | PINCH PRESSURE SPRING |
| 35(1)  | 4822 403 70638 | PAD ARM U.            |
| 36(1)  | 4822 403 70639 | TEN-REG. ARM U.       |
| 37(1)  | 4822 492 33358 | TEN-REG. SPRING       |
| 38(1)  | 4822 528 81474 | IDLER U.              |
| 39(1)  | 4822 522 33265 | RELAY GEAR U.         |
| 40(1)  | 4822 522 33266 | T-DRIVE GEAR U.       |
| 41(1)  | 4822 691 20915 | CYLINDER U.           |
| 42(1)  | 4822 532 12202 | WASHER                |
| 43(1)  | 4822 532 12201 | WASHER                |
| 44(1)  | 4822 502 21258 | SCREW                 |
| 46(1)  | 4822 532 12201 | WASHER                |
| 47(1)  | 4822 505 10776 | NUT                   |
| 48(1)  | 4822 505 11138 | ADJUST NUT            |
| 49(1)  | 4822 505 11152 | T3 POST NUT           |
| 50(1)  | 4822 502 21262 | SCREW                 |
| 51(1)  | 4822 492 42638 | LOCK SPRING           |
| 52(1)  | 4822 492 71502 | EARTH BRUSH U.        |
| 53(1)  | 4822 532 12202 | WASHER                |
| 54(1)  | 4822 532 12203 | WASHER                |
| 55(1)  | 4822 502 21474 | SCREW                 |
| 56(1)  | 4822 502 21473 | SCREW                 |
| 57(1)  | 4822 532 12201 | WASHER                |
| 58(1)  | 4822 492 71501 | S-GUIDE UNIT          |
| 101(2) | 4822 358 31189 | CAPSTAN BELT          |
| 104(2) | 4822 462 71883 | CAPSTAN STOPPER       |
| 105(2) | 4822 466 82971 | BARRIER               |
| 106(2) | 4822 276 30414 | REC SAFETY SW U.      |
| 107(2) | 4822 320 50331 | MECH. FLEXIBLE CARD   |
| 108(2) | 4822 130 83053 | PHOTO (L) U.          |
| 109(2) | 4822 130 83054 | PHOTO (R) U.          |
| 110(2) | 4822 403 71028 | T-REEL SENSOR U.      |
| 111(2) | 4822 520 30544 | LOWER BEARING         |
| 112(2) | 4822 362 10269 | STATOR U.             |
| 113(2) | 4822 691 20751 | MR HEAD               |
| 114(2) | 4822 520 10745 | HOUSING U.            |
| 115(2) | 4822 362 20237 | ROTOR U.              |
| 116(2) | 4822 502 21257 | SCREW                 |
| 117(2) | 4822 502 13715 | SCREW                 |
| 118(2) | 4822 403 71027 | DRIVE FLEX CARD       |
| 151(3) | 4822 691 20921 | GARAGE U.             |
| 152(3) | 4822 403 70622 | HOLDER U.             |

△.....Safety component, use only this type

|        |                |                     |
|--------|----------------|---------------------|
| 153(3) | 4822 403 70777 | GARAGE (1) U.       |
| 154(3) | 4822 403 70624 | STAND (L) U.        |
| 155(3) | 4822 130 83053 | PHOTO (L) U.        |
| 156(3) | 4822 403 70625 | STAND (R) U.        |
| 157(3) | 4822 130 83054 | PHOTO (R) U.        |
| 158(3) | 4822 403 70641 | TAPE GUIDE U.       |
| 159(3) | 4822 691 20922 | DUMPER              |
| 160(3) | 4822 492 42636 | UP SPRING (R)       |
| 161(3) | 4822 492 42637 | UP SPRING (L)       |
| 162(3) | 4822 464 51026 | VTR FRAME           |
| 165(3) | 4822 532 52067 | WASHER              |
| 166(3) | 4822 532 52068 | WASHER              |
| 168(3) | 4822 502 21475 | SCREW               |
| 169(3) | 4822 502 21254 | SCREW               |
| 170(3) | 4822 464 51015 | BOTTOM FRAME        |
| 171(3) | 4822 401 11511 | INSULATION PIECE(A) |
| 173(3) | 4822 466 10625 | PHOTO FLEX.CARD     |
| 174(3) | 4822 522 33263 | DUMPER RELAY GEAR   |
| 175(3) | 4822 403 70617 | TAPE OPEN LEVER     |
| 176(3) | 4822 528 81483 | ARM HOLDER          |
| 177(3) | 4822 532 52067 | WASHER              |
| 178(3) | 4822 492 42639 | TAPE GUIDE SPRING   |
| 179(3) | 4822 403 71025 | LOWER FRAME         |
| 180(3) | 4822 403 71027 | REAER FRAME         |
| 181(3) | 4822 466 83069 | INSULATION BARRIER  |

CAMERA LENS SECTION

|        |                |                      |
|--------|----------------|----------------------|
| 401(4) | 4822 380 30327 | CRYSTAL FILTER       |
| 402(4) | 4822 691 20916 | CCD UNIT             |
| 403(4) | 4822 466 62427 | CCD CUSHION          |
| 404(4) | 4822 381 11486 | LENS U.              |
| 405(4) | 4822 691 20941 | ZOOM ENCODER U.      |
| 406(4) | 4822 466 83055 | CRYSTAL MOUNT PLATE  |
| 407(4) | 4822 361 21672 | ZOOM MOTOR U.        |
| 408(4) | 4822 361 21673 | FOCUS MOTOR U.       |
| 409(4) | 4822 535 93434 | Z GUIDE POLE         |
| 410(4) | 4822 535 93435 | F GUIDE POLE         |
| 411(4) | 4822 525 10133 | IRIS U.              |
| 412(4) | 4822 464 50999 | 2ND. MOVING FRAME U. |
| 413(4) | 4822 522 10474 | SCREW SHAFT U.       |
| 414(4) | 4822 464 51001 | 4TH. MOVING FRAME U. |
| 415(4) | 4822 464 51002 | MAIN FRAME U.        |
| 416(4) | 4822 464 51003 | 3RD. MOVING FRAME U. |
| 417(4) | 4822 691 20923 | LENS FLEX. U.        |
| 418(4) | 4822 466 62428 | CCD SHIELD CASE      |

FRAME AND CASING SECTION

|        |                |                         |
|--------|----------------|-------------------------|
| 501(5) | 4822 432 60882 | SIDE CASE (R)(1) U.     |
| 502(5) | 4822 403 71109 | MODE SELECT LEVER U.    |
| 504(5) | 4822 432 60881 | CASSETTE COVER (1) U.   |
| 505(5) | 4822 410 62919 | CASSETTE LOCK BUTTON    |
| 506(5) | 4822 492 71422 | CASSETTE COIL SPRING    |
| 507(5) | 4822 502 21402 | SCREW                   |
| 508(5) | 4822 432 60861 | SIDE CASE (L)(1)U.      |
| 509(5) | 4822 410 63144 | ZOOM BUTTON U.          |
| 510(5) | 4822 492 71503 | CASSETTE HOLD SPRING    |
| 513(5) | 4822 410 62922 | S/S BUTTON (1) U.       |
| 514(5) | 4822 256 92153 | S/S BUTTON HOLDER       |
| 515(5) | 4822 492 71379 | S/S BUTTON COVER SPRING |
| 516(5) | 4822 403 70942 | S/S BUTTON SPACER       |
| 517(5) | 4822 466 93345 | S/S BUTTON SHEET        |
| 518(5) | 4822 276 13421 | RUBBER SW               |
| 519(5) | 4822 498 40603 | GRIP BELT U.            |
| 520(5) | 4822 432 60793 | AV JACK COVER           |
| 522(5) | 4822 403 71108 | DEW SENSOR              |
| 523(5) | 4822 462 71998 | HOOD CAP HINGE U.       |
| 525(5) | 4822 381 11444 | LENS PIECE              |
| 526(5) | 4822 459 11194 | LENS NAME PLATE         |
| 528(5) | 4822 466 93346 | MIC BARRIER             |
| 530(5) | 4822 432 60883 | FRONT CASE (1) U.       |
| 535(5) | 4822 432 60863 | LENS COVER (1) U.       |
| 537(5) | 4822 532 61239 | LENS HOOD               |
| 538(5) | 4822 462 71877 | EYE CAP                 |
| 539(5) | 4822 432 60864 | SLIDE CASE U.           |
| 540(5) | 4822 520 30551 | ROTARY PIECE            |

REPLACEMENT PARTSLIST M622

|        |                |                            |
|--------|----------------|----------------------------|
| 541(5) | 4822 492 71504 | ROTATION LOCK SPRING       |
| 542(5) | 4822 432 60849 | PROTECTION PANEL           |
| 543(5) | 4822 131 11013 | CRT U.                     |
| 544(5) | 4822 432 60862 | TOP OPERATION PANEL (1) U. |
| 545(5) | 4822 535 93433 | SHAFT                      |
| 546(5) | 4822 432 60865 | TOP DOOR                   |
| 547(5) | 4822 276 80439 | PANEL SW                   |
| 548(5) | 4822 492 71424 | EARTH ANGLE                |
| 549(5) | 4822 432 60792 | PANEL LIGHT                |
| 550(5) | 4822 410 62921 | CAM/VTR SELECT BUTTON      |
| 555(5) | 4822 464 50997 | LENS FRAME                 |
| 556(5) | 4822 403 70996 | SUPPORT ANGLE              |
| 557(5) | 4822 403 71114 | FRONT ANGLE                |
| 558(5) | 4822 505 11151 | CASE FIX. ANGLE            |
| 559(5) | 4822 462 72003 | MIC CAP                    |
| 560(5) | 4822 505 11166 | REAR CASE FIX. ANGLE       |
| 561(5) | 4822 502 21254 | SCREW                      |
| 562(5) | 4822 432 60879 | REAR CASE                  |
| 563(5) | 4822 403 71111 | BATTERY LOCK               |
| 564(5) | 4822 410 63145 | EJECT KNOB                 |
| 565(5) | 4822 403 71112 | EJECT KNOB HOLDER          |
| 566(5) | 4822 492 33453 | BATTERY LOCK SPRING        |
| 569(5) | 4822 432 60801 | CASE (R) FIX. ANGLE        |
| 570(5) | 4822 256 92115 | DC JACK HOLD ANGLE         |
| 576(5) | 4822 432 60854 | EVF CASE (L)               |
| 577(5) | 4822 432 60853 | EVF CASE (R)               |
| 578(5) | 4822 492 71505 | SLIDE SPRING               |
| 583(5) | 4822 464 51029 | TRIPOD FRAME               |
| 585(5) | 4822 502 21402 | SCREW                      |
| 586(5) | 4822 464 51028 | VTR FRAME (B)              |
| 587(5) | 4822 403 71113 | EVF FIXING PIECE           |
| 588(5) | 4822 466 83088 | EVF FIXING PLATE           |
| 590(5) | 4822 502 21288 | SCREW                      |
| 591(5) | 4822 464 51027 | VTR FRAME (C)              |
| 592(5) | 4822 321 62409 | MIC CONNECTOR CABLE        |
| 593(5) | 4822 432 60878 | CAMERA OPERATION UNIT      |

ACCESSORIES

|        |                |                                         |
|--------|----------------|-----------------------------------------|
| 605(6) | 4822 321 62082 | AC CORD                                 |
| 606(6) | 4822 321 11021 | DC OUTPUT CABLE                         |
| 608(6) | 4822 498 40597 | SHOLDER STRAP                           |
| 610(6) | 4822 736 53902 | DFU (ENGLISH/GERMAN/FRENCH/<br>SPANISH) |
| 610(6) | 4822 736 53903 | DFU (ITALIAN/DUTCH/SWEDISH/<br>DANISH)  |

JIG & TOOLS (electrical)

|                |                          |
|----------------|--------------------------|
| 4822 397 30186 | VHS-C ALIGNMENT TAPE     |
| 4822 397 60152 | COLOUR TEMP.CONV.FILTRER |
| 4822 480 30347 | COLOUR TEMP.CONV.FILTRER |
| 4822 321 61054 | EVR FIXTURE              |
| 4822 209 33292 | ROM                      |
| 4822 321 61621 | EVR CONNECTION CABLE 5P  |
| 4822 321 61617 | MEASURENT CABLE 24P      |
| 4822 321 61797 | FLAT CABLE 16P           |
| 4822 321 61798 | FLAT CABLE 9P            |
| 4822 321 61799 | FLAT CABLE 6P            |
| 4822 321 62236 | EXTENSION CABLE 12P      |
| 4822 321 62414 | EXTENSION CABLE 30P      |
| 4822 321 62213 | FLAT CABLE 23P           |
| 4822 321 62216 | FLAT CABLE 18P           |

JIG & TOOLS (mechanical)

|                |                        |
|----------------|------------------------|
| 4822 395 50432 | H-POSITION ADJUSTMENT  |
| 4822 395 90918 | ASTERISK TYPE RENCH    |
| 4822 395 40055 | RETAINING RING REMOVER |
| 4822 395 50275 | POST ADJ. SCREW DRIVER |
| 4822 395 50184 | HEX WRENCH SET         |
| 4822 395 90256 | HEAD CLEANING STICK    |

△.....Safety component, use only this type

CAMERA MAIN C.B.A.

CONNECTORS

|       |                |                    |
|-------|----------------|--------------------|
| B201  | 4822 265 41354 | CONNECTOR (12 PIN) |
| B302  | 4822 265 51368 | CONNECTOR (24 PIN) |
| B1001 | 4822 267 60343 | CONNECTOR (30 PIN) |
| B4002 | 4822 265 41353 | CONNECTOR (10 PIN) |
| B6004 | 4822 265 41278 | CONNECTOR (16 PIN) |

CAPACITORS

|         |                |          |      |
|---------|----------------|----------|------|
| C201    | 4822 125 60207 |          |      |
| C202,03 | 4822 126 12221 | 6pF/     | 50V  |
| C205    | 4822 126 11757 | 10pF/    | 50V  |
| C207    | 4822 126 11771 | 22pF/    | 50V  |
| C210    | 4822 126 11748 | 0.1μF/   | 16V  |
| C211-13 | 4822 126 11767 | 15pF/    | 50V  |
| C215    | 4822 126 10687 | 1μF/     | 16V  |
| C216    | 4822 124 11281 | 10μF/    | 6.3V |
| C225    | 4822 124 11377 | 1.5μF/   | 40V  |
| C233    | 4822 124 11237 | 3.3μF/   | 16V  |
| C234    | 4822 124 11281 | 10μF/    | 6.3V |
| C236    | 4822 126 11777 | 33pF/    | 50V  |
| C237    | 4822 126 11748 | 0.1μF/   | 16V  |
| C238    | 4822 124 11233 | 22μF/    | 6.3V |
| C239    | 4822 126 11748 | 0.1μF/   | 16V  |
| C240    | 4822 126 10687 | 1μF/     | 16V  |
| C241-44 | 4822 126 11748 | 0.1μF/   | 16V  |
| C245    | 4822 126 10687 | 1μF/     | 16V  |
| C246    | 4822 126 11748 | 0.1μF/   | 16V  |
| C247    | 4822 126 13223 | 0.047μF/ | 50V  |
| C249    | 4822 124 11281 | 10μF/    | 6.3V |
| C250    | 4822 121 70401 | 22μF/    | 4V   |
| C251    | 4822 124 11145 | 10μF/    | 4V   |
| C252,53 | 4822 126 11748 | 0.1μF/   | 16V  |
| C254    | 4822 126 10687 | 1μF/     | 16V  |
| C255    | 4822 126 11764 | 12pF/    | 50V  |
| C256    | 4822 124 11281 | 10μF/    | 6.3V |
| C257    | 4822 126 11748 | 0.1μF/   | 16V  |
| C258    | 4822 126 12197 | 1.8μF/   | 16V  |
| C262    | 4822 126 11748 | 0.1μF/   | 16V  |
| C265,66 | 4822 126 11774 | 27pF/    | 50V  |
| C267    | 4822 126 11748 | 0.1μF/   | 16V  |
| C269    | 4822 124 11376 | 4.7μF/   | 20V  |
| C270    | 4822 126 11774 | 27pF/    | 50V  |
| C271    | 4822 126 11748 | 0.1μF/   | 16V  |
| C272    | 4822 126 11774 | 27pF/    | 50V  |
| C273,74 | 4822 126 11748 | 0.1μF/   | 16V  |
| C275,76 | 4822 126 11774 | 27pF/    | 50V  |
| C301    | 4822 122 33788 | 82pF/    | 50V  |
| C302,03 | 4822 126 10687 | 1μF/     | 16V  |
| C304    | 4822 124 11281 | 10μF/    | 6.3V |
| C305    | 4822 126 11748 | 0.1μF/   | 16V  |
| C306    | 4822 124 11281 | 10μF/    | 6.3V |
| C307    | 4822 122 33671 | 0.22μF/  | 16V  |
| C308    | 4822 126 11768 | 150pF/   | 50V  |
| C309    | 4822 126 10687 | 1μF/     | 16V  |
| C310    | 4822 126 11762 | 0.01μF/  | 50V  |
| C312    | 4822 124 11281 | 10μF/    | 6.3V |
| C313    | 4822 126 11761 | 1000pF/  | 50V  |
| C314    | 4822 126 11763 | 0.01μF/  | 50V  |
| C315-17 | 4822 126 11748 | 0.1μF/   | 16V  |
| C318-20 | 4822 126 10687 | 1μF/     | 16V  |
| C322,23 | 4822 124 11281 | 10μF/    | 6.3V |
| C324    | 4822 126 11748 | 0.1μF/   | 16V  |
| C326    | 4822 126 11748 | 0.1μF/   | 16V  |
| C329    | 4822 122 33749 | 0.1μF/   | 50V  |
| C330    | 4822 124 11281 | 10μF/    | 6.3V |
| C331,32 | 4822 126 11748 | 0.1μF/   | 16V  |
| C333    | 4822 126 11761 | 1000pF/  | 50V  |
| C334,35 | 4822 124 11281 | 10μF/    | 6.3V |
| C336    | 4822 126 11748 | 0.1μF/   | 16V  |

REPLACEMENT PARTSLIST M622

|          |                |          |      |
|----------|----------------|----------|------|
| C338     | 4822 126 11762 | 0.01μF/  | 50V  |
| C343,44  | 4822 126 11761 | 1000pF/  | 50V  |
| C345,46  | 4822 126 10687 | 1μF/     | 16V  |
| C347     | 4822 126 11761 | 1000pF/  | 50V  |
| C348     | 4822 126 11788 | 56pF/    | 50V  |
| C350     | 4822 126 10687 | 1μF/     | 16V  |
| C351     | 4822 126 11788 | 56pF/    | 50V  |
| C352     | 4822 126 11792 | 68pF/    | 50V  |
| C353     | 4822 122 33749 | 0.1μF/   | 50V  |
| C360     | 4822 126 11788 | 56pF/    | 50V  |
| C370     | 4822 124 11281 | 10μF/    | 6.3V |
| C701     | 4822 124 10759 | 1μF/     | 16V  |
| C702     | 4822 126 13223 | 0.047μF/ | 50V  |
| C703     | 4822 124 11281 | 10μF/    | 6.3V |
| C710     | 4822 126 13223 | 0.047μF/ | 50V  |
| C711     | 4822 126 11778 | 330pF/   | 50V  |
| C716     | 4822 126 10687 | 1μF/     | 16V  |
| C719     | 4822 126 11761 | 1000pF/  | 50V  |
| C720     | 4822 122 33749 | 0.1μF/   | 50V  |
| C721     | 4822 126 11761 | 1000pF/  | 50V  |
| C722     | 4822 122 33749 | 0.1μF/   | 50V  |
| C724,25  | 4822 126 11763 | 0.01μF/  | 50V  |
| C729     | 4822 122 33749 | 0.1μF/   | 50V  |
| C730     | 4822 126 11748 | 0.1μF/   | 16V  |
| C731     | 4822 126 13165 | 1μF/     | 16V  |
| C732     | 4822 124 11281 | 10μF/    | 6.3V |
| C737     | 4822 126 11781 | 3300pF/  | 50V  |
| C738     | 4822 126 11759 | 100pF/   | 50V  |
| C739     | 4822 124 23588 | 100μF/   | 6.3V |
| C779     | 4822 122 33725 | 1μF/     | 16V  |
| C1001    | 4822 126 12198 | 3.3μF/   | 16V  |
| C1002    | 4822 126 12194 |          |      |
| C1003    | 4822 126 13164 | 8.2μF/   | 8V   |
| C1004    | 4822 126 11778 | 330pF/   | 50V  |
| C1005    | 4822 126 13165 | 1μF/     | 16V  |
| C1006    | 4822 126 10687 | 1μF/     | 16V  |
| C1007    | 4822 124 23907 | 47μF/    | 4V   |
| C1008    | 4822 126 13164 | 8.2μF/   | 8V   |
| C1009    | 4822 126 11778 | 330pF/   | 50V  |
| C1010    | 4822 126 13165 | 1μF/     | 16V  |
| C1011    | 4822 126 10687 | 1μF/     | 16V  |
| C1012    | 4822 126 11761 | 1000pF/  | 50V  |
| C1013    | 4822 126 12194 |          |      |
| C1014    | 4822 126 12477 | 560pF/   | 50V  |
| C1015    | 4822 124 23593 | 47μF/    | 16V  |
| C1017    | 4822 126 12473 | 1μF/     | 25V  |
| C1019    | 4822 126 12474 | 0.47μF/  | 25V  |
| C1020    | 4822 126 10687 | 1μF/     | 16V  |
| C1022    | 4822 122 33749 | 0.1μF/   | 50V  |
| C1024    | 4822 126 12199 | 0.47μF/  | 16V  |
| C1025    | 4822 126 11257 | 0.1μF/   | 16V  |
| C1026    | 4822 124 23243 | 1μF/     | 50V  |
| C1027    | 4822 126 11759 | 100pF/   | 50V  |
| C1028    | 4822 124 80169 | 0.47μF/  | 50V  |
| C1029    | 4822 122 33777 | 470pF/   | 50V  |
| C1030    | 4822 126 12218 | 8200pF/  | 50V  |
| C1031    | 4822 122 33777 | 470pF/   | 50V  |
| C1032    | 4822 126 12218 | 8200pF/  | 50V  |
| C1033-35 | 4822 126 11761 | 1000pF/  | 50V  |
| C1036    | 4822 122 33777 | 470pF/   | 50V  |
| C1037    | 4822 126 12218 | 8200pF/  | 50V  |
| C1040,41 | 4822 126 11762 | 0.01μF/  | 50V  |
| C1042    | 4822 126 13165 | 1μF/     | 16V  |
| C1043    | 4822 126 10687 | 1μF/     | 16V  |
| C1051    | 4822 126 12199 | 0.47μF/  | 16V  |
| C1056    | 4822 124 80599 | 33μF/    | 4V   |
| C1057    | 4822 126 13165 | 1μF/     | 16V  |
| C1058    | 4822 126 10687 | 1μF/     | 16V  |
| C1063    | 4822 126 11787 | 4700pF/  | 50V  |
| C1064    | 4822 124 80168 | 47μF/    | 16V  |
| C1066    | 4822 126 10687 | 1μF/     | 16V  |
| C3001    | 4822 124 23585 | 47μF/    | 4V   |
| C3002    | 4822 122 33725 | 1μF/     | 16V  |
| C3003    | 4822 126 11769 | 18pF/    | 50V  |
| C3005    | 4822 126 12204 | 0.039μF/ | 25V  |

△.....Safety component, use only this type

|          |                |          |      |
|----------|----------------|----------|------|
| C3006    | 4822 126 11769 | 18pF/    | 50V  |
| C3007    | 4822 126 11785 | 47pF/    | 50V  |
| C3008    | 4822 126 11771 | 22pF/    | 50V  |
| C3011    | 4822 126 11788 | 56pF/    | 50V  |
| C3012    | 4822 126 11792 | 68pF/    | 50V  |
| C3015    | 4822 126 11792 | 68pF/    | 50V  |
| C3022    | 4822 126 11782 | 39pF/    | 50V  |
| C3023    | 4822 126 11783 | 390pF/   | 50V  |
| C3024    | 4822 126 11782 | 39pF/    | 50V  |
| C3027    | 4822 126 11771 | 22pF/    | 50V  |
| C3028    | 4822 124 80162 | 470μF/   | 4V   |
| C3030    | 4822 122 33777 | 470pF/   | 50V  |
| C3031    | 4822 126 11782 | 39pF/    | 50V  |
| C3032    | 4822 124 11281 | 10μF/    | 6.3V |
| C3033,34 | 4822 126 11763 | 0.01μF/  | 50V  |
| C3035    | 4822 126 11762 | 0.01μF/  | 50V  |
| C3037    | 4822 126 11763 | 0.01μF/  | 50V  |
| C3040    | 4822 124 11281 | 10μF/    | 6.3V |
| C3041    | 4822 126 11763 | 0.01μF/  | 50V  |
| C3042    | 4822 126 11782 | 39pF/    | 50V  |
| C3043    | 4822 126 11772 | 220pF/   | 50V  |
| C4001    | 4822 126 11766 | 1200pF/  | 50V  |
| C4002    | 4822 126 11781 | 3300pF/  | 50V  |
| C4003    | 4822 124 11238 | 0.33μF/  | 35V  |
| C4004    | 4822 126 11768 | 150pF/   | 50V  |
| C4005    | 4822 124 23245 | 3.3μF/   | 50V  |
| C4006    | 4822 126 12208 | 0.015μF/ | 16V  |
| C4007    | 4822 124 23243 | 1μF/     | 50V  |
| C4008    | 4822 124 23907 | 47μF/    | 4V   |
| C4009    | 4822 126 10687 | 1μF/     | 16V  |
| C4010    | 4822 124 23907 | 47μF/    | 4V   |
| C4011,12 | 4822 124 23242 | 10μF/    | 16V  |
| C4013    | 4822 126 12207 | 0.012μF/ | 16V  |
| C4014    | 4822 126 11781 | 3300pF/  | 50V  |
| C4015    | 4822 126 11791 | 5600pF/  | 50V  |
| C4016    | 4822 126 11761 | 1000pF/  | 50V  |
| C4017    | 4822 126 10687 | 1μF/     | 16V  |
| C4018    | 4822 124 23242 | 10μF/    | 16V  |
| C4019    | 4822 126 11748 | 0.1μF/   | 16V  |
| C4020    | 4822 124 23907 | 47μF/    | 4V   |
| C4021    | 4822 126 11761 | 1000pF/  | 50V  |
| C4022    | 4822 126 12932 | 4700pF/  | 100V |
| C4023    | 4822 126 11794 | 6800pF/  | 50V  |
| C4024    | 4822 126 12924 | 0.022μF/ | 16V  |
| C4025    | 4822 124 23907 | 47μF/    | 4V   |
| C4026    | 4822 124 23243 | 1μF/     | 50V  |
| C4033,34 | 4822 126 11761 | 1000pF/  | 50V  |
| C4035    | 4822 126 11773 | 2200pF/  | 50V  |
| C4036    | 4822 126 11791 | 5600pF/  | 50V  |
| C4037    | 4822 126 10687 | 1μF/     | 16V  |
| C4038    | 4822 124 23237 | 22μF/    | 6.3V |
| C4040    | 4822 126 10687 | 1μF/     | 16V  |
| C5001    | 4822 124 11281 | 10μF/    | 6.3V |
| C5002    | 4822 126 11763 | 0.01μF/  | 50V  |
| C5003    | 4822 124 11281 | 10μF/    | 6.3V |
| C5004    | 4822 126 11763 | 0.01μF/  | 50V  |
| C5005    | 4822 122 33128 | 0.015μF/ | 50V  |
| C5006    | 4822 122 33735 | 0.027μF/ | 50V  |
| C5007    | 4822 126 11763 | 0.01μF/  | 50V  |
| C5008    | 4822 124 11281 | 10μF/    | 6.3V |
| C5009    | 4822 126 11763 | 0.01μF/  | 50V  |
| C5011    | 4822 126 11257 | 0.1μF/   | 16V  |
| C5013,14 | 4822 126 11763 | 0.01μF/  | 50V  |
| C5021-26 | 4822 126 11763 | 0.01μF/  | 50V  |
| C5027-30 | 4822 126 11774 | 27pF/    | 50V  |
| C5031-38 | 4822 122 33749 | 0.1μF/   | 50V  |
| C5039    | 4822 126 11765 | 120pF/   | 50V  |
| C5041    | 4822 122 33749 | 0.1μF/   | 50V  |
| C5042    | 4822 126 11763 | 0.01μF/  | 50V  |
| C5043    | 4822 126 11782 | 39pF/    | 50V  |
| C5044    | 4822 126 11768 | 150pF/   | 50V  |
| C6001-04 | 4822 126 11748 | 0.1μF/   | 16V  |
| C6005    | 4822 126 10687 | 1μF/     | 16V  |
| C6006,07 | 4822 126 11764 | 12pF/    | 50V  |
| C6008    | 4822 126 11748 | 0.1μF/   | 16V  |

REPLACEMENT PARTSLIST M622

|          |                |          |      |
|----------|----------------|----------|------|
| C6011    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6012,13 | 4822 126 11763 | 0.01μF/  | 50V  |
| C6014,15 | 4822 126 11748 | 0.1μF/   | 16V  |
| C6017    | 4822 126 11777 | 33pF/    | 50V  |
| C6018    | 4822 126 11769 | 18pF/    | 50V  |
| C6022,23 | 4822 126 11772 | 220pF/   | 50V  |
| C6024,25 | 4822 126 11748 | 0.1μF/   | 16V  |
| C6027    | 4822 124 23906 | 100μF/   | 4V   |
| C6030    | 4822 122 33725 | 1μF/     | 16V  |
| C6031    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6038    | 4822 126 11763 | 0.01μF/  | 50V  |
| C6040    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6060    | 4822 126 11762 | 0.01μF/  | 50V  |
| C6100    | 4822 124 23242 | 10μF/    | 16V  |
| C6201    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6203    | 4822 124 23242 | 10μF/    | 16V  |
| C6204,05 | 4822 126 11731 | 1μF/     | 16V  |
| C6206    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6207,08 | 4822 124 23242 | 10μF/    | 16V  |
| C6209    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6210    | 4822 126 11763 | 0.01μF/  | 50V  |
| C6211    | 4822 126 12216 | 0.022μF/ | 50V  |
| C6213    | 4822 124 23907 | 47μF/    | 4V   |
| C6214    | 4822 126 12477 | 560pF/   | 50V  |
| C6221    | 4822 126 11748 | 0.1μF/   | 16V  |
| C6230    | 4822 124 23237 | 22μF/    | 6.3V |
| C6231    | 4822 126 11748 | 0.1μF/   | 16V  |
| C8001    | 4822 126 11781 | 3300pF/  | 50V  |
| C8002    | 4822 126 11792 | 68pF/    | 50V  |
| C8003    | 4822 124 11292 | 4.7μF/   | 6.3V |
| C8004    | 4822 126 12218 | 8200pF/  | 50V  |
| C8005    | 4822 126 11748 | 0.1μF/   | 16V  |
| C8007,08 | 4822 126 11759 | 100pF/   | 50V  |
| C8010    | 4822 122 33788 | 82pF/    | 50V  |
| C8011    | 4822 126 11759 | 100pF/   | 50V  |
| C8012    | 4822 122 33788 | 82pF/    | 50V  |
| C8013    | 4822 126 11772 | 220pF/   | 50V  |
| C8014    | 4822 126 11763 | 0.01μF/  | 50V  |
| C8020    | 4822 126 11763 | 0.01μF/  | 50V  |
| C8021    | 4822 124 11281 | 10μF/    | 6.3V |
| C8022    | 4822 126 11759 | 100pF/   | 50V  |
| C8023    | 4822 122 33788 | 82pF/    | 50V  |
| C8024    | 4822 126 11777 | 33pF/    | 50V  |
| C8025    | 4822 126 11764 | 12pF/    | 50V  |
| C8026    | 4822 126 12221 | 6pF/     | 50V  |
| C8027    | 4822 126 11757 | 10pF/    | 50V  |
| C8030    | 4822 124 11281 | 10μF/    | 6.3V |
| C8031    | 4822 126 11763 | 0.01μF/  | 50V  |
| C8032    | 4822 126 11762 | 0.01μF/  | 50V  |
| C8033    | 4822 126 10687 | 1μF/     | 16V  |
| C8034-37 | 4822 126 11763 | 0.01μF/  | 50V  |
| C8038,39 | 4822 126 11748 | 0.1μF/   | 16V  |
| C8041    | 4822 126 11763 | 0.01μF/  | 50V  |
| C8042    | 4822 126 11748 | 0.1μF/   | 16V  |

DIODES

|          |                |           |
|----------|----------------|-----------|
| D203     | 4822 130 80732 | MA728     |
| D206-09  | 4822 130 80727 | MA110     |
| D301     | 4822 130 80732 | MA728     |
| D303,04  | 4822 130 80732 | MA728     |
| D305     | 4822 130 80727 | MA110     |
| D306     | 4822 130 80732 | MA728     |
| D703     | 4822 130 82443 | MA132WA   |
| D1002    | 4822 130 83495 | SFPB-76   |
| D1004    | 4822 130 82729 | EC10QS04  |
| D1005    | 4822 130 82728 | SB05-05CP |
| D1006,07 | 4822 130 82732 | MA132K    |
| D1008    | 4822 130 80732 | MA728     |
| D1012    | 4822 130 82445 | MA133     |
| D1015    | 4822 130 82025 | MA738     |
| D1062    | 4822 130 82728 | SB05-05CP |
| D1064    | 4822 130 80732 | MA728     |
| D5001,02 | 4822 130 82443 | MA132WA   |
| D6008    | 4822 130 80727 | MA110     |

△.....Safety component, use only this type

|          |                |         |
|----------|----------------|---------|
| D6011    | 4822 130 82444 | MA132WK |
| D6012,13 | 4822 130 82443 | MA132WA |
| D6015    | 4822 130 80732 | MA728   |
| D6016    | 4822 130 82445 | MA133   |
| D6018    | 4822 130 80732 | MA728   |
| D6300    | 4822 130 82732 | MA132K  |
| D6301    | 4822 130 82445 | MA133   |
| D6303    | 4822 130 82018 | BR1102W |
| D8002    | 4822 130 80727 | MA110   |

FILTERS

|       |                |          |
|-------|----------------|----------|
| FL201 | 4822 242 81337 | ELB3H009 |
|-------|----------------|----------|

CONNECTORS

|        |                |                   |
|--------|----------------|-------------------|
| FP701  | 4822 267 51293 | CONNECTOR(18 PIN) |
| FP4001 | 4822 267 51288 | CONNECTOR(09 PIN) |
| FP5001 | 4822 267 51289 | CONNECTOR(13 PIN) |
| FP6001 | 4822 267 51182 | CONNECTOR(16 PIN) |
| FP6002 | 4822 267 41072 | CONNECTOR(06 PIN) |
| FP6005 | 4822 267 60368 | CONNECTOR(        |

## REPLACEMENT PARTSLIST M622

|          |                |            |
|----------|----------------|------------|
| L307     | 4822 157 70622 | coil 6.8μH |
| L308     | 4822 157 63955 | coil 10μH  |
| L309     | 4822 157 70254 | coil       |
| L310     | 4822 157 70622 | coil 6.8μH |
| L311     | 4822 157 70254 | coil       |
| L312     | 4822 157 70867 | coil 22μH  |
| L313,14  | 4822 157 70255 | coil       |
| L315,16  | 4822 157 70622 | coil 6.8μH |
| L317     | 4822 157 70255 | coil       |
| L318     | 4822 157 70622 | coil 6.8μH |
| L319     | 4822 157 70254 | coil       |
| L321     | 4822 157 70255 | coil       |
| L325     | 4822 157 63961 | coil 39μH  |
| L701     | 4822 157 70255 | coil       |
| L703     | 4822 157 70255 | coil       |
| L706,07  | 4822 157 70255 | coil       |
| L1001    | 4822 157 71103 | coil       |
| L1002    | 4822 157 71105 | coil       |
| L1003    | 4822 157 71104 | coil       |
| L1006    | 4822 157 62968 | coil 47μH  |
| L1007    | 4822 157 71106 | coil       |
| L1008    | 4822 157 71104 | coil       |
| L1009    | 4822 157 62967 | coil 10μH  |
| L1010,11 | 4822 157 62333 | coil 100μH |
| L1012    | 4822 157 62967 | coil 10μH  |
| L1014    | 4822 157 62967 | coil 10μH  |
| L1015    | 4822 157 62055 | coil 15μH  |
| L1062    | 4822 157 71107 | coil       |
| L3001    | 4822 157 63481 | coil 56μH  |
| L3002    | 4822 157 62333 | coil 100μH |
| L3003    | 4822 157 70631 | coil 82μH  |
| L3005    | 4822 157 62455 | coil 120μH |
| L3006    | 4822 157 53431 | coil 120μH |
| L3011    | 4822 157 62975 | coil 33μH  |
| L3012    | 4822 157 70238 | coil 15μH  |
| L3013    | 4822 157 63954 | coil 150μH |
| L3014    | 4822 157 70629 | coil 22μH  |
| L3015    | 4822 157 62333 | coil 100μH |
| L3016    | 4822 157 63962 | coil 47μH  |
| L3021    | 4822 157 62333 | coil 100μH |
| L3022    | 4822 157 62975 | coil 33μH  |
| L4001    | 4822 157 62333 | coil 100μH |
| L5001-04 | 4822 157 62333 | coil 100μH |
| L5005    | 4822 157 62457 | coil 12μH  |
| L6001    | 4822 157 10207 | coil 33μH  |
| L6002    | 4822 157 62333 | coil 100μH |
| L8001    | 4822 157 62968 | coil 47μH  |
| L8002    | 4822 157 62055 | coil 15μH  |
| L8003    | 4822 157 63962 | coil 47μH  |
| L8004    | 4822 157 63958 | coil 27μH  |
| L8005,06 | 4822 157 70237 | coil 10μH  |
| L8007    | 4822 157 62055 | coil 15μH  |
| L8011    | 4822 157 52996 | coil 100μH |

### CONNECTORS

|       |                |                  |    |
|-------|----------------|------------------|----|
| P303  | 4822 265 31128 | CONNECTOR (MALE) | 6P |
| P4003 | 4822 265 41341 | CONNECTOR (MALE) | 7P |
| P4004 | 4822 265 31146 | CONNECTOR (MALE) | 3P |

### TRANSISTORS

|         |                |         |
|---------|----------------|---------|
| Q204    | 4822 130 62579 | 2SB1462 |
| Q206    | 4822 130 62582 | 2SC4627 |
| Q207    | 4822 130 62574 | XP1401  |
| Q208    | 4822 130 62577 | XP4601  |
| Q209-11 | 4822 130 63052 | XP4654  |
| Q301    | 4822 130 62576 | XP4501  |
| Q701    | 4822 130 61067 | XN1401  |
| Q702    | 4822 130 62575 | XP4401  |
| Q703    | 4822 130 61098 | 2SD874  |
| Q704    | 4822 130 42671 | 2SD601A |
| Q705    | 4822 130 62586 | 2SD2216 |
| Q706    | 4822 130 62809 | XP1501  |
| Q707,08 | 4822 130 62576 | XP4501  |
| Q709    | 4822 130 42666 | 2SD1030 |
| Q1001   | 4822 130 63512 | 2SA1731 |

|          |                |           |
|----------|----------------|-----------|
| Q1002,03 | 4822 130 42734 | 2SB798    |
| Q1004    | 4822 130 62585 | 2SD2210   |
| Q1005    | 4822 130 62345 | 2SB1073   |
| Q1062    | 4822 130 42734 | 2SB798    |
| Q3001    | 4822 130 62203 | XN4501    |
| Q3002    | 4822 130 62202 | XN4401    |
| Q3005    | 4822 130 62579 | 2SB1462   |
| Q3006    | 4822 130 42664 | 2SB970X   |
| Q3011,12 | 4822 130 62582 | 2SC4627   |
| Q3013    | 4822 130 62586 | 2SD2216   |
| Q3020,21 | 4822 130 62579 | 2SB1462   |
| Q3022    | 4822 130 62582 | 2SC4627   |
| Q4001    | 4822 130 62576 | XP4501    |
| Q4003    | 4822 130 62579 | 2SB1462   |
| Q4004    | 4822 130 62586 | 2SD2216   |
| Q4005    | 4822 130 63462 | 2SD602A-R |
| Q4006    | 4822 130 61076 | 2SB1219   |
| Q4007,08 | 4822 130 62586 | 2SD2216   |
| Q4011    | 4822 130 62586 | 2SD2216   |
| Q4012    | 4822 130 62576 | XP4501    |
| Q5001,02 | 4822 130 62225 | XN4504    |
| Q5003,04 | 4822 130 61068 | XN1501    |
| Q5011,12 | 4822 130 61074 | 2SA812    |
| Q6002    | 4822 130 62586 | 2SD2216   |
| Q6004    | 4822 130 62586 | 2SD2216   |
| Q6005    | 4822 130 63062 | XP6501    |
| Q6006    | 4822 130 62579 | 2SB1462   |
| Q6201    | 4822 130 62579 | 2SB1462   |
| Q6300    | 4822 130 62579 | 2SB1462   |
| Q6301    | 4822 130 62586 | 2SD2216   |
| Q8002    | 4822 130 62579 | 2SB1462   |
| Q8003    | 4822 130 62586 | 2SD2216   |
| Q8004    | 4822 130 62579 | 2SB1462   |
| Q8005    | 4822 130 62586 | 2SD2216   |
| Q8006    | 4822 130 62582 | 2SC4627   |

### TRANSISTOR RESISTORS

|          |                |         |
|----------|----------------|---------|
| QR301    | 4822 130 62564 | UN9212  |
| QR701    | 4822 130 62563 | UN9211  |
| QR1002   | 4822 130 62566 | UN9214  |
| QR1006   | 4822 130 63055 | UN2130X |
| QR1061   | 4822 130 62831 | UN9115  |
| QR3001   | 4822 130 62564 | UN9212  |
| QR3003   | 4822 130 62565 | UN9213  |
| QR3004,0 | 4822 130 62564 | UN9212  |
| QR4001,0 | 4822 130 63059 | XP1213  |
| QR5001,0 | 4822 130 62565 | UN9213  |
| QR5004   | 4822 130 63055 | UN2130X |
| QR5005   | 4822 130 62565 | UN9213  |
| QR6001   | 4822 130 63055 | UN2130X |
| QR6003   | 4822 130 62558 | UN9112  |
| QR6004   | 4822 130 63456 | XP4115  |
| QR6007   | 4822 130 62563 | UN9211  |
| QR6008   | 4822 130 62562 | UN9210  |
| QR6010   | 4822 130 63059 | XP1213  |
| QR6012   | 4822 130 63059 | XP1213  |
| QR6014   | 4822 130 62565 | UN9213  |
| QR6015   | 4822 130 62567 | UN9215  |
| QR6016   | 4822 130 63059 | XP1213  |
| QR6018   | 4822 130 62832 | UN921E  |
| QR8001   | 4822 130 62565 | UN9213  |

### RESISTORS

|         |                |             |
|---------|----------------|-------------|
| R201    | 4822 116 81049 | 1MΩ 1/16W   |
| R202    | 4822 116 81067 | 220Ω 1/16W  |
| R203    | 4822 116 81089 | 470Ω 1/16W  |
| R205    | 4822 116 81095 | 560Ω 1/16W  |
| R206    | 4822 116 81112 | 0Ω 1/16W    |
| R207    | 4822 116 81089 | 470Ω 1/16W  |
| R212    | 4822 116 81095 | 560Ω 1/16W  |
| R214-17 | 4822 116 81046 | 1KΩ 1/16W   |
| R218    | 4822 116 81067 | 220Ω 1/16W  |
| R223,24 | 4822 116 81074 | 2.7KΩ 1/16W |
| R225    | 4822 116 81101 | 6.8KΩ 1/16W |

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST M622

|         |                |             |         |                |             |
|---------|----------------|-------------|---------|----------------|-------------|
| R233    | 4822 116 81078 | 330Ω 1/16W  | R360    | 4822 116 81097 | 56KΩ 1/16W  |
| R236    | 4822 116 81107 | 820Ω 1/16W  | R361    | 4822 116 81091 | 4.7KΩ 1/16W |
| R237    | 4822 116 81047 | 10KΩ 1/16W  | R364    | 4822 116 81046 | 1KΩ 1/16W   |
| R238    | 4822 116 81052 | 1.2KΩ 1/16W | R371    | 4822 116 81053 | 12KΩ 1/16W  |
| R239    | 4822 116 81074 | 2.7KΩ 1/16W | R374    | 4822 116 81068 | 2.2KΩ 1/16W |
| R241,42 | 4822 116 81101 | 6.8KΩ 1/16W | R375-80 | 4822 116 81046 | 1KΩ 1/16W   |
| R243    | 4822 116 81068 | 2.2KΩ 1/16W | R382,83 | 4822 116 81046 | 1KΩ 1/16W   |
| R244    | 4822 116 81074 | 2.7KΩ 1/16W | R385    | 4822 116 81047 | 10KΩ 1/16W  |
| R245    | 4822 116 81085 | 3.9KΩ 1/16W | R386    | 4822 116 81762 | 4.7Ω 1/16W  |
| R246    | 4822 116 81046 | 1KΩ 1/16W   | R390    | 4822 116 81046 | 1KΩ 1/16W   |
| R247    | 4822 116 81103 | 680KΩ 1/16W | R391    | 4822 116 81047 | 10KΩ 1/16W  |
| R249    | 4822 116 81096 | 5.6KΩ 1/16W | R392    | 4822 116 81102 | 68KΩ 1/16W  |
| R250    | 4822 116 81062 | 1.8KΩ 1/16W | R701    | 4822 116 81057 | 15KΩ 1/16W  |
| R251    | 4822 116 81096 | 5.6KΩ 1/16W | R702,03 | 4822 116 81074 | 2.7KΩ 1/16W |
| R252    | 4822 116 81056 | 1.5KΩ 1/16W | R704    | 4822 116 81046 | 1KΩ 1/16W   |
| R253    | 4822 116 81108 | 82KΩ 1/16W  | R705    | 4822 100 12145 | 33KΩ 1/10W  |
| R255    | 4822 116 81046 | 1KΩ 1/16W   | R708    | 4822 116 81046 | 1KΩ 1/16W   |
| R256    | 4822 116 81091 | 4.7KΩ 1/16W | R709    | 4822 100 12145 | 33KΩ 1/10W  |
| R257    | 4822 116 81064 | 180KΩ 1/16W | R710    | 4822 100 12141 | 22KΩ 1/10W  |
| R258    | 4822 116 81049 | 1MΩ 1/16W   | R711    | 4822 100 12077 | 1KΩ 1/10W   |
| R259    | 4822 116 81112 | 0Ω 1/16W    | R712    | 4822 100 30185 | 1.5KΩ 1/10W |
| R260    | 4822 116 81091 | 4.7KΩ 1/16W | R713    | 4822 100 12146 | 560Ω 1/10W  |
| R263    | 4822 116 81078 | 330Ω 1/16W  | R714    | 4822 116 81046 | 1KΩ 1/16W   |
| R264    | 4822 116 81067 | 220Ω 1/16W  | R715,16 | 4822 116 81091 | 4.7KΩ 1/16W |
| R265    | 4822 116 81068 | 2.2KΩ 1/16W | R717    | 4822 116 81067 | 220Ω 1/16W  |
| R266    | 4822 116 81079 | 3.3KΩ 1/16W | R718    | 4822 116 81109 | 820KΩ 1/16W |
| R267    | 4822 116 81112 | 0Ω 1/16W    | R719    | 4822 116 81112 | 0Ω 1/16W    |
| R268    | 4822 116 81045 | 100Ω 1/16W  | R720,21 | 4822 116 81047 | 10KΩ 1/16W  |
| R269    | 4822 116 81077 | 33Ω 1/16W   | R722    | 4822 116 81048 | 100KΩ 1/16W |
| R270    | 4822 116 81099 | 680Ω 1/16W  | R723    | 4822 116 81058 | 150KΩ 1/16W |
| R271    | 4822 116 81083 | 39Ω 1/16W   | R724    | 4822 116 81046 | 1KΩ 1/16W   |
| R272,73 | 4822 116 81106 | 82Ω 1/16W   | R725    | 4822 116 81045 | 100Ω 1/16W  |
| R274    | 4822 116 81046 | 1KΩ 1/16W   | R726    | 4822 117 10603 | 2KΩ 1/16W   |
| R275    | 4822 116 81049 | 1MΩ 1/16W   | R727    | 4822 116 81069 | 22KΩ 1/16W  |
| R282    | 4822 116 81112 | 0Ω 1/16W    | R728    | 4822 116 81075 | 27KΩ 1/16W  |
| R284    | 4822 116 81106 | 82Ω 1/16W   | R729    | 4822 116 81063 | 18KΩ 1/16W  |
| R285    | 4822 116 81077 | 33Ω 1/16W   | R730    | 4822 116 81047 | 10KΩ 1/16W  |
| R286    | 4822 116 81099 | 680Ω 1/16W  | R731,32 | 4822 116 81092 | 47KΩ 1/16W  |
| R287-89 | 4822 116 81106 | 82Ω 1/16W   | R733    | 4822 116 81071 | 220KΩ 1/16W |
| R290    | 4822 116 81077 | 33Ω 1/16W   | R734,35 | 4822 116 81053 | 12KΩ 1/16W  |
| R291    | 4822 116 81099 | 680Ω 1/16W  | R736    | 4822 116 81093 | 470KΩ 1/16W |
| R292,93 | 4822 116 81106 | 82Ω 1/16W   | R737    | 4822 116 81087 | 390KΩ 1/16W |
| R295    | 4822 116 81048 | 100KΩ 1/16W | R738    | 4822 116 81071 | 220KΩ 1/16W |
| R296    | 4822 116 81068 | 2.2KΩ 1/16W | R739    | 4822 116 81057 | 15KΩ 1/16W  |
| R297    | 4822 116 81091 | 4.7KΩ 1/16W | R740    | 4822 116 81075 | 27KΩ 1/16W  |
| R298    | 4822 116 81046 | 1KΩ 1/16W   | R741    | 4822 116 81092 | 47KΩ 1/16W  |
| R299    | 4822 116 81074 | 2.7KΩ 1/16W | R742    | 4822 116 81069 | 22KΩ 1/16W  |
| R301    | 4822 116 81067 | 220Ω 1/16W  | R743    | 4822 116 81057 | 15KΩ 1/16W  |
| R302,03 | 4822 116 81069 | 22KΩ 1/16W  | R744    | 4822 116 81047 | 10KΩ 1/16W  |
| R304,05 | 4822 116 81046 | 1KΩ 1/16W   | R745    | 4822 116 81092 | 47KΩ 1/16W  |
| R307    | 4822 116 81046 | 1KΩ 1/16W   | R746    | 4822 116 81057 | 15KΩ 1/16W  |
| R310    | 4822 116 81069 | 22KΩ 1/16W  | R747,48 | 4822 116 81047 | 10KΩ 1/16W  |
| R311    | 4822 116 81063 | 18KΩ 1/16W  | R749    | 4822 116 82791 | 10KΩ 1/16W  |
| R312,13 | 4822 116 81053 | 12KΩ 1/16W  | R750    | 4822 116 82839 | 30KΩ 1/16W  |
| R314    | 4822 116 81063 | 18KΩ 1/16W  | R751    | 4822 116 81067 | 220Ω 1/16W  |
| R315    | 4822 116 81047 | 10KΩ 1/16W  | R752    | 4822 116 81061 | 180Ω 1/16W  |
| R316    | 4822 116 81052 | 1.2KΩ 1/16W | R753    | 4822 100 12139 | 10KΩ 1/10W  |
| R317    | 4822 116 81046 | 1KΩ 1/16W   | R754    | 4822 116 81046 | 1KΩ 1/16W   |
| R318,19 | 4822 116 81091 | 4.7KΩ 1/16W | R755    | 4822 100 12139 | 10KΩ 1/10W  |
| R320    | 4822 116 81052 | 1.2KΩ 1/16W | R756    | 4822 116 81092 | 47KΩ 1/16W  |
| R321    | 4822 116 81046 | 1KΩ 1/16W   | R757    | 4822 117 10602 | 11KΩ 1/16W  |
| R322    | 4822 116 81091 | 4.7KΩ 1/16W | R758    | 4822 116 82495 | 39KΩ 1/16W  |
| R323    | 4822 116 81048 | 100KΩ 1/16W | R759    | 4822 116 81091 | 4.7KΩ 1/16W |
| R326-28 | 4822 116 81092 | 47KΩ 1/16W  | R760    | 4822 051 30338 | 3.3Ω 1/16W  |
| R329-31 | 4822 116 81091 | 4.7KΩ 1/16W | R761    | 4822 116 81108 | 82KΩ 1/16W  |
| R332    | 4822 116 81081 | 33KΩ 1/16W  | R763    | 4822 116 81092 | 47KΩ 1/16W  |
| R333    | 4822 116 81069 | 22KΩ 1/16W  | R764    | 4822 051 30338 | 3.3Ω 1/16W  |
| R334,35 | 4822 116 81092 | 47KΩ 1/16W  | R765    | 4822 051 30125 | 1.2KΩ 1/16W |
| R336    | 4822 116 81091 | 4.7KΩ 1/16W | R767    | 4822 116 81097 | 56KΩ 1/16W  |
| R337-40 | 4822 116 81049 | 1MΩ 1/16W   | R1001   | 4822 116 83317 | 8.2KΩ       |
| R342    | 4822 116 81097 | 56KΩ 1/16W  | R1002   | 4822 117 10133 | 2.7KΩ       |
| R343-45 | 4822 116 81092 | 47KΩ 1/16W  | R1003   | 4822 116 81046 | 1KΩ 1/16W   |
| R348-54 | 4822 116 81092 | 47KΩ 1/16W  | R1004   | 4822 116 81084 | 390Ω 1/16W  |
| R355-58 | 4822 116 81045 | 100Ω 1/16W  | R1005   | 4822 117 10135 | 5.6KΩ       |
| R359    | 4822 116 81099 | 680Ω 1/16W  | R1006   | 4822 117 10133 | 2.7KΩ       |

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST M622

|          |                |             |
|----------|----------------|-------------|
| R1007    | 4822 116 83295 | 33Ω 1/8W    |
| R1008    | 4822 116 83312 | 10KΩ        |
| R1009    | 4822 116 83313 | 1.5KΩ       |
| R1010    | 4822 116 81046 | 1KΩ 1/16W   |
| R1012    | 4822 100 30183 |             |
| R1013    | 4822 116 83316 | 39KΩ        |
| R1014,15 | 4822 117 10131 | 1.8KΩ       |
| R1016    | 4822 116 83306 | 15KΩ 1/10W  |
| R1017    | 4822 051 20102 | 1KΩ 1/10W   |
| R1018    | 4822 116 81055 | 150Ω 1/16W  |
| R1019    | 4822 051 20102 | 1KΩ 1/10W   |
| R1020    | 4822 116 81055 | 150Ω 1/16W  |
| R1021    | 4822 116 81077 | 33Ω 1/16W   |
| R1022    | 4822 051 30159 | 15Ω 1/16W   |
| R1023    | 4822 116 81062 | 1.8KΩ 1/16W |
| R1024    | 4822 116 81088 | 47Ω 1/16W   |
| R1025    | 4822 051 20102 | 1KΩ 1/10W   |
| R1026    | 4822 116 81046 | 1KΩ 1/16W   |
| R1027    | 4822 116 81055 | 150Ω 1/16W  |
| R1033    | 4822 116 81046 | 1KΩ 1/16W   |
| R1035    | 4822 116 81088 | 47Ω 1/16W   |
| R1038    | 4822 100 12113 | 75Ω 1/10W   |
| R1039    | 4822 100 12176 | 430Ω 1/10W  |
| R1040    | 4822 100 12111 | 150Ω 1/10W  |
| R1051    | 4822 100 12079 | 27KΩ 1/10W  |
| R1052    | 4822 100 12082 | 47KΩ 1/10W  |
| R1062    | 4822 051 20391 | 390Ω 1/10W  |
| R1063    | 4822 116 81047 | 10KΩ 1/16W  |
| R1065    | 4822 116 81052 | 1.2KΩ 1/16W |
| R1071    | 4822 116 81046 | 1KΩ 1/16W   |
| R1072    | 4822 116 81048 | 100KΩ 1/16W |
| R1073    | 4822 116 81045 | 100Ω 1/16W  |
| R1080    | 4822 051 10008 | 0Ω 1/8W     |
| R3001    | 4822 116 82345 | 75Ω 1/16W   |
| R3002    | 4822 051 30225 | 2.2MΩ 1/16W |
| R3003,04 | 4822 116 81112 | 0Ω 1/16W    |
| R3005    | 4822 116 81073 | 270Ω 1/16W  |
| R3007    | 4822 116 81047 | 10KΩ 1/16W  |
| R3008,09 | 4822 116 81056 | 1.5KΩ 1/16W |
| R3010    | 4822 116 81063 | 18KΩ 1/16W  |
| R3015,16 | 4822 116 81052 | 1.2KΩ 1/16W |
| R3017    | 4822 116 81084 | 390Ω 1/16W  |
| R3018    | 4822 116 81073 | 270Ω 1/16W  |
| R3019    | 4822 116 81107 | 820Ω 1/16W  |
| R3021,22 | 4822 116 81047 | 10KΩ 1/16W  |
| R3023,24 | 4822 116 81095 | 560Ω 1/16W  |
| R3025,26 | 4822 116 81099 | 680Ω 1/16W  |
| R3027    | 4822 116 81056 | 1.5KΩ 1/16W |
| R3028    | 4822 116 81095 | 560Ω 1/16W  |
| R3029    | 4822 116 81091 | 4.7KΩ 1/16W |
| R3032    | 4822 116 81056 | 1.5KΩ 1/16W |
| R3035    | 4822 116 81112 | 0Ω 1/16W    |
| R3036    | 4822 116 81107 | 820Ω 1/16W  |
| R3037    | 4822 116 81079 | 3.3KΩ 1/16W |
| R3038    | 4822 116 81046 | 1KΩ 1/16W   |
| R3040    | 4822 116 81078 | 330Ω 1/16W  |
| R3050    | 4822 116 81099 | 680Ω 1/16W  |
| R3051    | 4822 116 81112 | 0Ω 1/16W    |
| R3057    | 4822 116 81112 | 0Ω 1/16W    |
| R3058    | 4822 116 81068 | 2.2KΩ 1/16W |
| R3059    | 4822 116 81107 | 820Ω 1/16W  |
| R3060    | 4822 116 82344 | 68Ω 1/16W   |
| R3062    | 4822 116 81046 | 1KΩ 1/16W   |
| R3063,64 | 4822 116 81052 | 1.2KΩ 1/16W |
| R3071,72 | 4822 116 81074 | 2.7KΩ 1/16W |
| R3073    | 4822 116 81046 | 1KΩ 1/16W   |
| R3074    | 4822 116 81068 | 2.2KΩ 1/16W |
| R3081    | 4822 116 81068 | 2.2KΩ 1/16W |
| R3082    | 4822 116 81069 | 22KΩ 1/16W  |
| R3086    | 4822 116 81096 | 5.6KΩ 1/16W |
| R3090,91 | 4822 116 81112 | 0Ω 1/16W    |
| R4001    | 4822 116 81044 | 10Ω 1/16W   |
| R4002    | 4822 116 81081 | 33KΩ 1/16W  |
| R4003    | 4822 116 81094 | 56Ω 1/16W   |
| R4004    | 4822 100 12029 | 430Ω 1/10W  |

|          |                |             |
|----------|----------------|-------------|
| R4005    | 4822 116 81082 | 330KΩ 1/16W |
| R4006    | 4822 100 12031 | 5.6KΩ 1/10W |
| R4007    | 4822 116 81085 | 3.9KΩ 1/16W |
| R4008,09 | 4822 116 81063 | 18KΩ 1/16W  |
| R4010    | 4822 100 12028 | 2.7KΩ 1/10W |
| R4011    | 4822 100 12144 | 3.3KΩ 1/10W |
| R4012    | 4822 116 81049 | 1MΩ 1/16W   |
| R4013    | 4822 116 81081 | 33KΩ 1/16W  |
| R4014    | 4822 116 81053 | 12KΩ 1/16W  |
| R4015    | 4822 116 81056 | 1.5KΩ 1/16W |
| R4016    | 4822 116 81063 | 18KΩ 1/16W  |
| R4017    | 4822 116 81078 | 330Ω 1/16W  |
| R4018    | 4822 116 81085 | 3.9KΩ 1/16W |
| R4019    | 4822 116 81068 | 2.2KΩ 1/16W |
| R4020    | 4822 116 81069 | 22KΩ 1/16W  |
| R4021    | 4822 116 81057 | 15KΩ 1/16W  |
| R4022    | 4822 116 81069 | 22KΩ 1/16W  |
| R4023,24 | 4822 116 81091 | 4.7KΩ 1/16W |
| R4025    | 4822 116 83271 | 2.2MΩ 1/10W |
| R4026    | 4822 116 81097 | 56KΩ 1/16W  |
| R4027,28 | 4822 116 81091 | 4.7KΩ 1/16W |
| R4029    | 4822 116 81097 | 56KΩ 1/16W  |
| R4030    | 4822 116 81045 | 100Ω 1/16W  |
| R4031,32 | 4822 116 81091 | 4.7KΩ 1/16W |
| R4033    | 4822 116 82344 | 68Ω 1/16W   |
| R4034    | 4822 116 81068 | 2.2KΩ 1/16W |
| R4035    | 4822 116 81046 | 1KΩ 1/16W   |
| R4036,37 | 4822 116 81069 | 22KΩ 1/16W  |
| R4038    | 4822 100 12175 | 13KΩ 1/10W  |
| R4047    | 4822 116 81047 | 10KΩ 1/16W  |
| R4049,50 | 4822 116 81047 | 10KΩ 1/16W  |
| R4051    | 4822 116 81096 | 5.6KΩ 1/16W |
| R4052    | 4822 116 81078 | 330Ω 1/16W  |
| R4053    | 4822 116 81068 | 2.2KΩ 1/16W |
| R4054    | 4822 116 81069 | 22KΩ 1/16W  |
| R4055    | 4822 116 81095 | 560Ω 1/16W  |
| R5001    | 4822 116 81062 | 1.8KΩ 1/16W |
| R5002    | 4822 116 81095 | 560Ω 1/16W  |
| R5003    | 4822 116 81091 | 4.7KΩ 1/16W |
| R5005    | 4822 116 81101 | 6.8KΩ 1/16W |
| R5011,12 | 4822 116 81067 | 220Ω 1/16W  |
| R5013-16 | 4822 116 81107 | 820Ω 1/16W  |
| R5017    | 4822 116 81044 | 10Ω 1/16W   |
| R5021    | 4822 116 81142 | 8.2KΩ 1/16W |
| R5022    | 4822 116 81063 | 18KΩ 1/16W  |
| R5023    | 4822 116 81073 | 270Ω 1/16W  |
| R5024    | 4822 116 81061 | 180Ω 1/16W  |
| R5025    | 4822 116 83273 | 4.7Ω 1/10W  |
| R6002    | 4822 116 81056 | 1.5KΩ 1/16W |
| R6003    | 4822 116 81076 | 270KΩ 1/16W |
| R6004    | 4822 116 81075 | 27KΩ 1/16W  |
| R6011    | 4822 116 81102 | 68KΩ 1/16W  |
| R6012    | 4822 116 81046 | 1KΩ 1/16W   |
| R6013    | 4822 116 81047 | 10KΩ 1/16W  |
| R6014    | 4822 116 81049 | 1MΩ 1/16W   |
| R6015    | 4822 116 81047 | 10KΩ 1/16W  |
| R6016    | 4822 116 81091 | 4.7KΩ 1/16W |
| R6017    | 4822 116 81092 | 47KΩ 1/16W  |
| R6018    | 4822 116 81069 | 22KΩ 1/16W  |
| R6019    | 4822 116 81071 | 220KΩ 1/16W |
| R6020    | 4822 116 81069 | 22KΩ 1/16W  |
| R6021    | 4822 051 10129 | 12Ω 1/8W    |
| R6022    | 4822 116 81069 | 22KΩ 1/16W  |
| R6024    | 4822 116 81102 | 68KΩ 1/16W  |
| R6025    | 4822 116 81046 | 1KΩ 1/16W   |
| R6026    | 4822 116 81092 | 47KΩ 1/16W  |
| R6027,28 | 4822 051 20221 | 220Ω 1/10W  |
| R6029    | 4822 116 81091 | 4.7KΩ 1/16W |
| R6030    | 4822 116 81112 | 0Ω 1/16W    |
| R6031    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6032,33 | 4822 116 81046 | 1KΩ 1/16W   |
| R6034    | 4822 116 81045 | 100Ω 1/16W  |
| R6035    | 4822 116 81047 | 10KΩ 1/16W  |
| R6039    | 4822 051 10228 | 2.2Ω 1/8W   |
| R6040    | 4822 116 81071 | 220KΩ 1/16W |

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST M622

|          |                |             |
|----------|----------------|-------------|
| R6041    | 4822 116 81103 | 680KΩ 1/16W |
| R6042    | 4822 116 81053 | 12KΩ 1/16W  |
| R6043    | 4822 116 81071 | 220KΩ 1/16W |
| R6044    | 4822 116 82632 | 22KΩ 1/10W  |
| R6045    | 4822 100 12112 | 33KΩ 1/10W  |
| R6048,49 | 4822 116 81092 | 47KΩ 1/16W  |
| R6050    | 4822 116 81102 | 68KΩ 1/16W  |
| R6051    | 4822 116 81093 | 470KΩ 1/16W |
| R6052,53 | 4822 116 81064 | 180KΩ 1/16W |
| R6054    | 4822 116 81092 | 47KΩ 1/16W  |
| R6055,56 | 4822 116 81046 | 1KΩ 1/16W   |
| R6059    | 4822 116 81112 | 0Ω 1/16W    |
| R6060    | 4822 116 81085 | 3.9KΩ 1/16W |
| R6061    | 4822 116 81057 | 15KΩ 1/16W  |
| R6063    | 4822 116 81046 | 1KΩ 1/16W   |
| R6066    | 4822 116 81102 | 68KΩ 1/16W  |
| R6070    | 4822 116 81045 | 100Ω 1/16W  |
| R6071    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6073    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6074    | 4822 116 81047 | 10KΩ 1/16W  |
| R6075    | 4822 116 81079 | 3.3KΩ 1/16W |
| R6076    | 4822 116 81074 | 2.7KΩ 1/16W |
| R6078    | 4822 116 81085 | 3.9KΩ 1/16W |
| R6079    | 4822 116 81112 | 0Ω 1/16W    |
| R6080    | 4822 116 81102 | 68KΩ 1/16W  |
| R6090,91 | 4822 116 81079 | 3.3KΩ 1/16W |
| R6108    | 4822 116 81046 | 1KΩ 1/16W   |
| R6111    | 4822 116 81097 | 56KΩ 1/16W  |
| R6112    | 4822 116 81081 | 33KΩ 1/16W  |
| R6113    | 4822 116 81092 | 47KΩ 1/16W  |
| R6120,21 | 4822 116 81147 | 0Ω 1/10W    |
| R6130    | 4822 116 81107 | 820Ω 1/16W  |
| R6131    | 4822 116 81046 | 1KΩ 1/16W   |
| R6134    | 4822 116 81102 | 68KΩ 1/16W  |
| R6135    | 4822 116 81051 | 120Ω 1/16W  |
| R6136    | 4822 116 81046 | 1KΩ 1/16W   |
| R6137    | 4822 116 81048 | 100KΩ 1/16W |
| R6138    | 4822 116 81102 | 68KΩ 1/16W  |
| R6139    | 4822 116 81092 | 47KΩ 1/16W  |
| R6140    | 4822 116 81102 | 68KΩ 1/16W  |
| R6142    | 4822 116 81047 | 10KΩ 1/16W  |
| R6143    | 4822 116 81092 | 47KΩ 1/16W  |
| R6144    | 4822 116 81046 | 1KΩ 1/16W   |
| R6145    | 4822 116 81085 | 3.9KΩ 1/16W |
| R6150    | 4822 116 81074 | 2.7KΩ 1/16W |
| R6151    | 4822 116 81082 | 330KΩ 1/16W |
| R6152    | 4822 116 81054 | 120KΩ 1/16W |
| R6153    | 4822 116 81093 | 470KΩ 1/16W |
| R6154    | 4822 116 81048 | 100KΩ 1/16W |
| R6155    | 4822 116 81102 | 68KΩ 1/16W  |
| R6160    | 4822 116 81046 | 1KΩ 1/16W   |
| R6161    | 4822 116 81048 | 100KΩ 1/16W |
| R6168    | 4822 116 81102 | 68KΩ 1/16W  |
| R6170    | 4822 116 81046 | 1KΩ 1/16W   |
| R6199    | 4822 116 81046 | 1KΩ 1/16W   |
| R6203    | 4822 116 81047 | 10KΩ 1/16W  |
| R6205    | 4822 116 81071 | 220KΩ 1/16W |
| R6206,07 | 4822 116 81048 | 100KΩ 1/16W |
| R6208    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6209    | 4822 116 81061 | 180Ω 1/16W  |
| R6210,11 | 4822 116 81068 | 2.2KΩ 1/16W |
| R6212    | 4822 116 81047 | 10KΩ 1/16W  |
| R6213    | 4822 116 81068 | 2.2KΩ 1/16W |
| R6214    | 4822 116 81048 | 100KΩ 1/16W |
| R6215    | 4822 116 81112 | 0Ω 1/16W    |
| R6216    | 4822 051 10228 | 2.2Ω 1/8W   |
| R6230    | 4822 116 83268 | 1.5MΩ 1/16W |
| R6231    | 4822 051 10228 | 2.2Ω 1/8W   |
| R6300    | 4822 116 81101 | 6.8KΩ 1/16W |
| R6301    | 4822 116 81062 | 1.8KΩ 1/16W |
| R6302    | 4822 116 81077 | 33Ω 1/16W   |
| R6303    | 4822 116 81086 | 39KΩ 1/16W  |
| R6304    | 4822 116 81112 | 0Ω 1/16W    |
| R6305    | 4822 116 81087 | 390KΩ 1/16W |
| R6309    | 4822 116 81046 | 1KΩ 1/16W   |

|          |                |             |
|----------|----------------|-------------|
| R6310    | 4822 116 81045 | 100Ω 1/16W  |
| R6311    | 4822 116 81046 | 1KΩ 1/16W   |
| R8001,02 | 4822 116 81047 | 10KΩ 1/16W  |
| R8003    | 4822 116 81089 | 470Ω 1/16W  |
| R8004    | 4822 116 81107 | 820Ω 1/16W  |
| R8005    | 4822 116 81046 | 1KΩ 1/16W   |
| R8007    | 4822 116 81095 | 560Ω 1/16W  |
| R8010    | 4822 116 81095 | 560Ω 1/16W  |
| R8011    | 4822 116 81074 | 2.7KΩ 1/16W |
| R8012    | 4822 116 81047 | 10KΩ 1/16W  |
| R8013    | 4822 116 81057 | 15KΩ 1/16W  |
| R8014,15 | 4822 116 81046 | 1KΩ 1/16W   |
| R8016    | 4822 116 81099 | 680Ω 1/16W  |
| R8017    | 4822 116 81068 | 2.2KΩ 1/16W |
| R8018    | 4822 116 81074 | 2.7KΩ 1/16W |
| R8020,21 | 4822 116 81046 | 1KΩ 1/16W   |
| R8026    | 4822 116 81047 | 10KΩ 1/16W  |
| R8027    | 4822 116 81057 | 15KΩ 1/16W  |
| R8028    | 4822 116 81142 | 8.2KΩ 1/16W |
| R8029    | 4822 116 81057 | 15KΩ 1/16W  |
| R8030,31 | 4822 116 81046 | 1KΩ 1/16W   |
| R8032    | 4822 116 81091 | 4.7KΩ 1/16W |
| R8033    | 4822 116 81085 | 3.9KΩ 1/16W |
| R8034    | 4822 116 81099 | 680Ω 1/16W  |
| R8037    | 4822 100 12143 | 270Ω 1/10W  |
| R8040    | 4822 116 81046 | 1KΩ 1/16W   |
| R8041    | 4822 116 81108 | 82KΩ 1/16W  |
| R8043,44 | 4822 116 81112 | 0Ω 1/16W    |
| R8046,47 | 4822 116 81047 | 10KΩ 1/16W  |
| R8048    | 4822 100 12143 | 270Ω 1/10W  |
| R8049    | 4822 117 10136 | 15KΩ 1/10W  |
| R8050,51 | 4822 116 82345 | 75Ω 1/16W   |
| R8052,53 | 4822 116 81093 | 470KΩ 1/16W |
| R8054    | 4822 116 81078 | 330Ω 1/16W  |
| R8056    | 4822 116 81112 | 0Ω 1/16W    |

### RESISTORS

|          |                |
|----------|----------------|
| RA6001   | 4822 111 92178 |
| RA6003   | 4822 111 92177 |
| RA6004,0 | 4822 111 92097 |
| RA6006   | 4822 111 92177 |
| RA6007   | 4822 111 92097 |
| RA6008-1 | 4822 111 92178 |
| RA6013   | 4822 111 92177 |

### TRANSFORMERS

|       |                |             |
|-------|----------------|-------------|
| T1001 | 4822 148 81354 | TRANSFORMER |
| T1002 | 4822 148 81384 | TRANSFORMER |
| T4001 | 4822 148 81389 | TRANSFORMER |

### THERMISTORS

|       |                |            |
|-------|----------------|------------|
| TH701 | 4822 111 92169 | THERMISTOR |
|-------|----------------|------------|

### VARIABLE RESISTORS

|        |                |
|--------|----------------|
| VR3001 | 4822 101 30779 |
| VR3003 | 4822 101 30783 |

### CRYSTALS

|       |                |                    |
|-------|----------------|--------------------|
| X201  | 4822 242 81506 | CRYSTAL OSCILLATOR |
| X301  | 4822 242 81778 | CRYSTAL OSCILLATOR |
| X6001 | 4822 242 81227 | CRYSTAL OSCILLATOR |
| X6002 | 4822 242 81721 | CRYSTAL OSCILLATOR |
| X8001 | 4822 242 81507 | CRYSTAL OSCILLATOR |

△.....Safety component, use only this type

# REPLACEMENT PARTSLIST M622

## DRIVE C.B.A.

### CAPACITORS

|          |                |          |      |
|----------|----------------|----------|------|
| C2001    | 4822 126 12481 | 0.56μF/  | 16V  |
| C2002    | 4822 126 11731 | 1μF/     | 16V  |
| C2003    | 4822 126 11781 | 3300pF/  | 50V  |
| C2004    | 4822 126 11785 | 47pF/    | 50V  |
| C2005    | 4822 126 12213 | 1500pF/  | 50V  |
| C2007    | 4822 126 11731 | 1μF/     | 16V  |
| C2009    | 4822 126 11257 | 0.1μF/   | 16V  |
| C2011    | 4822 126 12211 | 0.022μF/ | 25V  |
| C2012    | 4822 126 12926 | 0.047μF/ | 16V  |
| C2014    | 4822 124 11105 | 4.7μF/   | 10V  |
| C2015-17 | 4822 126 11257 | 0.1μF/   | 16V  |
| C2018    | 4822 124 11281 | 10μF/    | 6.3V |
| C2020-22 | 4822 126 11762 | 0.01μF/  | 50V  |
| C2023    | 4822 124 11281 | 10μF/    | 6.3V |
| C2024    | 4822 126 11762 | 0.01μF/  | 50V  |
| C2025-27 | 4822 126 11748 | 0.1μF/   | 16V  |
| C2028    | 4822 124 11281 | 10μF/    | 6.3V |
| C2029-32 | 4822 126 11763 | 0.01μF/  | 50V  |
| C2033    | 4822 126 12197 | 1.8μF/   | 16V  |
| C2036    | 4822 126 11748 | 0.1μF/   | 16V  |
| C2040-42 | 4822 126 12926 | 0.047μF/ | 16V  |

### CONNECTORS

|        |                |                   |
|--------|----------------|-------------------|
| FP2001 | 4822 267 51185 | CONNECTOR(07 PIN) |
| FP2002 | 4822 267 51296 | CONNECTOR(18 PIN) |
| FP2003 | 4822 267 60368 | CONNECTOR(23 PIN) |

### INTEGRATED CIRCUITS

|          |                |          |
|----------|----------------|----------|
| IC2001   | 4822 209 32797 | TB6513AF |
| IC2002,0 | 4822 209 31425 | UN224    |

### TRANSISTOR RESISTORS

|        |                |        |
|--------|----------------|--------|
| QR2001 | 4822 209 71452 | 0N2170 |
| QR2002 | 4822 130 61061 | UN5215 |

### RESISTORS

|          |                |             |
|----------|----------------|-------------|
| R2001    | 4822 116 81046 | 1KΩ 1/16W   |
| R2002    | 4822 116 81071 | 220KΩ 1/16W |
| R2003    | 4822 116 81068 | 2.2KΩ 1/16W |
| R2004    | 4822 116 81058 | 150KΩ 1/16W |
| R2005    | 4822 116 81085 | 3.9KΩ 1/16W |
| R2006    | 4822 116 81093 | 470KΩ 1/16W |
| R2007    | 4822 117 10127 | 0.47UΩ 1/8W |
| R2008    | 4822 116 83291 | 0.33Ω 1/8W  |
| R2009    | 4822 116 81095 | 560Ω 1/16W  |
| R2010    | 4822 116 81047 | 10KΩ 1/16W  |
| R2011    | 4822 051 20271 | 270Ω 1/10W  |
| R2012    | 4822 116 81103 | 680KΩ 1/16W |
| R2014    | 4822 116 81046 | 1KΩ 1/16W   |
| R2015    | 4822 116 81092 | 47KΩ 1/16W  |
| R2016    | 4822 116 81068 | 2.2KΩ 1/16W |
| R2017    | 4822 116 81046 | 1KΩ 1/16W   |
| R2018    | 4822 116 81091 | 4.7KΩ 1/16W |
| R2019,20 | 4822 116 81089 | 470Ω 1/16W  |
| R2021    | 4822 051 20101 | 100Ω 1/10W  |
| R2022    | 4822 116 83291 | 0.33Ω 1/8W  |
| R2040-42 | 4822 116 81078 | 330Ω 1/16W  |
| R2045,46 | 4822 116 81092 | 47KΩ 1/16W  |

## MISCELLANEOUS

4822 256 92003 REEL SENSOR STATOR

## E.V.F. C.B.A.

### CONNECTORS

|       |                |                    |
|-------|----------------|--------------------|
| B1601 | 4822 265 51373 | CONNECTOR (30 PIN) |
|-------|----------------|--------------------|

### CAPACITORS

|         |                |          |      |
|---------|----------------|----------|------|
| C801    | 4822 126 13246 |          |      |
| C802-04 | 4822 126 10687 | 1μF/     | 16V  |
| C805    | 4822 124 23899 | 220μF/   | 6.3V |
| C806    | 4822 126 12207 | 0.012μF/ | 16V  |
| C807    | 4822 126 11731 | 1μF/     | 16V  |
| C809    | 4822 124 80167 | 47μF/    | 16V  |
| C810    | 4822 126 13167 | 3300pF/  | 100V |
| C811    | 4822 124 11407 | 47μF/    | 10V  |
| C812    | 4822 126 11769 | 18pF/    | 50V  |
| C813    | 4822 126 13168 | 220pF/   | 630V |
| C814    | 4822 124 23243 | 1μF/     | 50V  |
| C815    | 4822 126 11802 | 330pF/   | 500V |
| C816    | 4822 122 33749 | 0.1μF/   | 50V  |
| C831    | 4822 122 33749 | 0.1μF/   | 50V  |
| C1603   | 4822 124 23592 | 22μF/    | 10V  |

### DIODES

|          |                |         |
|----------|----------------|---------|
| D803     | 4822 130 83549 | MA142WA |
| D1601    | 4822 130 83498 | SFPB-64 |
| D1602,03 | 4822 130 83404 | MA8130M |

### INTEGRATED CIRCUITS

|       |                |         |
|-------|----------------|---------|
| IC801 | 4822 209 33254 | AN2516S |
|-------|----------------|---------|

### JACKS

|       |                |      |
|-------|----------------|------|
| J1601 | 4822 267 31704 | JACK |
| J1602 | 4822 267 31703 | JACK |

### COILS

|          |                |           |
|----------|----------------|-----------|
| L801     | 4822 157 63471 | coil      |
| L802     | 4822 157 71188 | coil      |
| L804     | 4822 157 71102 | coil 68μH |
| L805     | 4822 157 63942 | coil      |
| L1601,02 | 4822 157 63947 | coil      |

### CONNECTORS

|       |                |                  |    |
|-------|----------------|------------------|----|
| P801  | 4822 265 31165 | CONNECTOR (MALE) | 4P |
| P803  | 4822 265 31026 | CONNECTOR (MALE) | 3P |
| P804  | 4822 267 30573 | CONNECTOR (MALE) | 2P |
| P1602 | 4822 265 20608 | CONNECTOR (MALE) | 2P |

### TRANSISTORS

|         |                |           |
|---------|----------------|-----------|
| Q802    | 4822 130 61087 | 2SD968A-S |
| Q803,04 | 4822 130 63342 | 2SA1748   |

### RESISTORS

|      |                |            |
|------|----------------|------------|
| R801 | 4822 116 82628 |            |
| R802 | 4822 116 83272 | 3.9Ω 1/10W |

⚠.....Safety component, use only this type



## REPLACEMENT PARTSLIST M622

|         |                |             |
|---------|----------------|-------------|
| R803    | 4822 116 81147 | 0Ω 1/10W    |
| R805    | 4822 116 81046 | 1KΩ 1/16W   |
| R808    | 4822 100 12142 | 2.4KΩ 1/10W |
| R809    | 4822 116 81098 | 560KΩ 1/16W |
| R810    | 4822 117 11084 | 100KΩ 1/10W |
| R815    | 4822 116 81046 | 1KΩ 1/16W   |
| R816,17 | 4822 116 81091 | 4.7KΩ 1/16W |
| R818    | 4822 116 81069 | 22KΩ 1/16W  |
| R819,20 | 4822 051 20275 | 2.7MΩ 1/10W |
| R821    | 4822 051 20105 | 1MΩ 1/10W   |
| R823    | 4822 116 81763 | 8.2Ω 1/16W  |
| R829    | 4822 116 83725 |             |
| R833    | 4822 116 81085 | 3.9KΩ 1/16W |
| R834    | 4822 116 81052 | 1.2KΩ 1/16W |
| R835    | 4822 116 81069 | 22KΩ 1/16W  |
| R840    | 4822 117 11085 | 6.8MΩ 1/8W  |
| R841,42 | 4822 051 20475 | 4.7MΩ 1/10W |
| R843    | 4822 116 81098 | 560KΩ 1/16W |
| R844    | 4822 051 20399 | 39Ω 1/10W   |
| R850    | 4822 117 11083 |             |
| R851    | 4822 117 11082 |             |
| R852    | 4822 051 20822 | 8.2KΩ 1/10W |
| R853    | 4822 116 81117 | 10KΩ 1/10W  |
| R854    | 4822 116 81067 | 220Ω 1/16W  |
| R855    | 4822 116 81055 | 150Ω 1/16W  |
| R899    | 4822 116 81061 | 180Ω 1/16W  |
| R1601   | 4822 113 90239 |             |
| R1606   | 4822 051 20102 | 1KΩ 1/10W   |

### SWITCHES

|       |                |        |
|-------|----------------|--------|
| SW892 | 4822 276 13456 | SWITCH |
|-------|----------------|--------|

### TRANSFORMERS

|      |                |             |
|------|----------------|-------------|
| T801 | 4822 146 21779 | TRANSFORMER |
|------|----------------|-------------|

### VARIABLE RESISTORS

|       |                |
|-------|----------------|
| VR801 | 4822 100 30091 |
| VR803 | 4822 101 30787 |
| VR804 | 4822 100 12138 |

### BATTERY

|       |                |         |
|-------|----------------|---------|
| Z1601 | 4822 138 10548 | BATTERY |
|-------|----------------|---------|

### MISCELLANEOUS

|                |            |
|----------------|------------|
| 4822 321 62413 | WIRE CABLE |
|----------------|------------|

## CCD FLEX.CARD C.B.A.

### CONNECTORS

|      |                |                    |
|------|----------------|--------------------|
| B291 | 4822 267 51315 | CONNECTOR (12 PIN) |
|------|----------------|--------------------|

### CAPACITORS

|          |                |              |
|----------|----------------|--------------|
| C292     | 4822 124 11329 | 2.2μF/ 35V   |
| C293,C29 | 4822 122 33672 | 0.047μF/ 25V |
| C295     | 4822 122 33731 | 0.1μF/ 25V   |

### DIODES

|      |                |       |
|------|----------------|-------|
| D291 | 4822 130 32868 | MA153 |
|------|----------------|-------|

### TRANSISTORS

|      |                |         |
|------|----------------|---------|
| Q291 | 4822 130 61593 | 2SC2295 |
|------|----------------|---------|

### RESISTORS

|      |                |             |
|------|----------------|-------------|
| R291 | 4822 117 10749 | 56Ω 1/16W   |
| R292 | 4822 116 81114 | 4.7KΩ 1/16W |
| W291 | 4822 116 81147 |             |

### MISCELLANEOUS

|                |            |
|----------------|------------|
| 4822 466 10645 | FLEX. CARD |
|----------------|------------|

## LENS FLEX. CARD C.B.A.

### MISCELLANEOUS

|                |              |
|----------------|--------------|
| 4822 130 83405 | PHOTO SENSOR |
|----------------|--------------|

## MIC UNIT

### CAPACITORS

|          |                |              |
|----------|----------------|--------------|
| C4302    | 4822 126 13166 | 0.015μF/ 25V |
| C4305    | 4822 122 33735 | 0.027μF/ 50V |
| C4308    | 5322 122 34123 | 1000pF/ 50V  |
| C4309,10 | 4822 122 33735 | 0.027μF/ 50V |

### DIODES

|       |                |        |
|-------|----------------|--------|
| D4301 | 4822 130 82717 | RD5.6M |
|-------|----------------|--------|

### CONNECTORS

|       |                |                  |    |
|-------|----------------|------------------|----|
| P4301 | 4822 265 31148 | CONNECTOR (MALE) | 3P |
|-------|----------------|------------------|----|

### TRANSISTORS

|       |                |         |
|-------|----------------|---------|
| Q4302 | 4822 130 62581 | 2SC2405 |
| Q4303 | 4822 130 42671 | 2SD601A |

### RESISTORS

|          |                |             |
|----------|----------------|-------------|
| R4302    | 4822 051 20222 | 2.2KΩ 1/10W |
| R4309    | 4822 051 20224 | 220KΩ 1/10W |
| R4310    | 4822 051 20334 | 330KΩ 1/10W |
| R4311    | 4822 051 20822 | 8.2KΩ 1/10W |
| R4312    | 4822 051 20102 | 1KΩ 1/10W   |
| R4313,14 | 4822 051 20683 | 68KΩ 1/10W  |
| R4315    | 4822 051 20183 | 18KΩ 1/10W  |
| R4316    | 4822 051 20332 | 3.3KΩ 1/10W |

## FRONT OPERATION C.B.A.

### DIODES

|      |                |         |
|------|----------------|---------|
| D501 | 5322 130 81026 | PH310-1 |
|------|----------------|---------|

### CONNECTORS

|      |                |                  |    |
|------|----------------|------------------|----|
| P052 | 4822 265 41389 | CONNECTOR (MALE) | 7P |
|------|----------------|------------------|----|

△.....Safety component, use only this type

## REPLACEMENT PARTSLIST M622

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### SWITCHES

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SW501    4822 276 13342    SWITCH

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### MISCELLANEOUS

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4822 321 62412    WIRE CABLE

### AV JACK C.B.A.

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### CONNECTORS

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B1501    4822 267 51303    CONNECTOR (10 PIN)

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### COILS

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L1503    4822 157 70987    coil  
L1504-06    4822 157 70257    coil

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### MISCELLANEOUS

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4822 290 81608    AV JACK PLATE  
4822 492 71506    EARTH PLATE

### S/S C.B.A.

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### CONNECTORS

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PJ6701    4822 265 30928    CONNECTOR (MALE)

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### SWITCHES

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SW702    4822 276 13418    SWITCH

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### MISCELLANEOUS

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4822 321 62411    WIRE CABLE